

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

Founded in 1909 by Stanley Spooner
FIRST AERONAUTICAL
WEEKLY IN THE
WORLD

DEVOTED TO THE INTERESTS,
PRACTICE AND PROGRESS
OF AVIATION

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The Great Race

AT 6.30 on Saturday morning the red flag will, if all goes according to schedule, start the first competitor in the race from England to Australia for the prizes and trophy presented by Sir MacPherson Robertson. Out of an original entry list of more than seventy, it looks as if but twenty-five aeroplanes will actually start in the race. On the face of it this may appear disappointing, but it should be remembered that never in the history of flying have we had an air race comparable with the England-Australia in distance and difficulty. The race is of such a nature that long stages have to be flown non-stop, "hops" of considerably more than 2,000 miles occurring several times. Furthermore, owing to the fact that in the speed race the time spent on the ground counts as flying time, a large proportion of the time will be spent in night flying over very difficult country. It is not too much to say that a forced landing over some of the stages would almost certainly end in disaster. Fortunately, modern aero engines are amazingly reliable, and as many of the competing machines have two engines, the risk of forced landings should be relatively small. In the case of the single-engined machines this risk is probably a good deal greater, but the list of likely starters indicates that several pilots are prepared to pin their faith in single-power units.

One may safely say that it is not the risk which has kept so many entries out of the race, but plain £ s. d. In spite of the very generous prize of £10,000 to the winner of the speed race, it should be remembered that the money will be paid in Australian currency. At the present rate the value in England will be in the neighbourhood of £7,500. By the time a competitor has purchased a machine, has had it transported to the starting point, has arranged for payment of his petrol and oil supplies, and the personal expenses of himself and his crew or passengers, he will have incurred an outlay

which cannot, in most cases, be very far short of the amount of money which he stands to receive should he win the race. It is not, therefore, to be wondered at that many of the original entrants have been obliged to relinquish their object.

Among the American competitors there were probably a good many who were, when they entered, counting upon the petrol companies to supply free petrol. When the companies refused to do so, one very big item was added to the expense sheet. Similar considerations probably weighed heavily with entrants of other nationalities also. The next stage began when these entrants commenced to look around for financial assistance from other sources. There is a tendency in certain circles to sneer at a pilot who races with advertisements on his machine. It is very easy to adopt a superior attitude, but how many good pilots could afford to pay the expenses out of their own pockets? Or, for the matter of that, how many pilots have the funds, even if they were prepared to put into the venture every penny they had?

Imposing as would have been the spectacle of seventy or so aeroplanes heading for Australia, it is not an unmixed blessing that so many have dropped out. The congestion both at the starting point, and even more at the controls and checking points, would be likely to be serious, and in the speed race particularly it was to be expected that there would be a scurry to get to the petrol pumps. As matters stand, it is unlikely that there will be many cases of two competitors arriving simultaneously and making for the official who will sign their log book and send them off to the petrol pump.

At the time of going to press with this week's issue of *Flight* it is not possible to give a complete list of the starters, as several of them, particularly those expected from abroad, have been granted extensions and will be admitted to the race if they turn up at Mildenhall by the middle of the week. Although British machines are in the majority, there should be a goodly sprinkling of aeroplanes of other nations, and

it appears likely that, in addition to Great Britain and Australia, Denmark, France, Italy, Holland, and the United States of America will be represented.

Of the chances in the race it is difficult to form a decided opinion. Several of the foreign, notably American, machines are reputed to have speeds of 250 m.p.h. or so. None of the British machines entered will quite touch that figure, but the de Havilland "Comets" are believed capable of about 235 m.p.h. maximum. There are three of them, so that the chances of one of them winning the race should be reasonably good. With their two engines and their ability to maintain level flight with one engine stopped, they should be able to count on virtual immunity from forced landings.

All readers of *Flight* will, we feel sure, join us in wishing all the competitors all good fortune. May the best man win!

A Service which Makes for Confidence

THE King can do no wrong, and therefore he takes no open part in politics. Constitutionally the Prince of Wales, being a subject, is not restricted to quite the same extent in his utterances, but as he is the Heir Apparent and presumably will one day be King himself, it would naturally be considered indiscreet if he were to express disagreement with the policy of His Majesty's Government for the time being. The present Prince of Wales would be the last man to go outside the limits thus imposed upon him by his position.

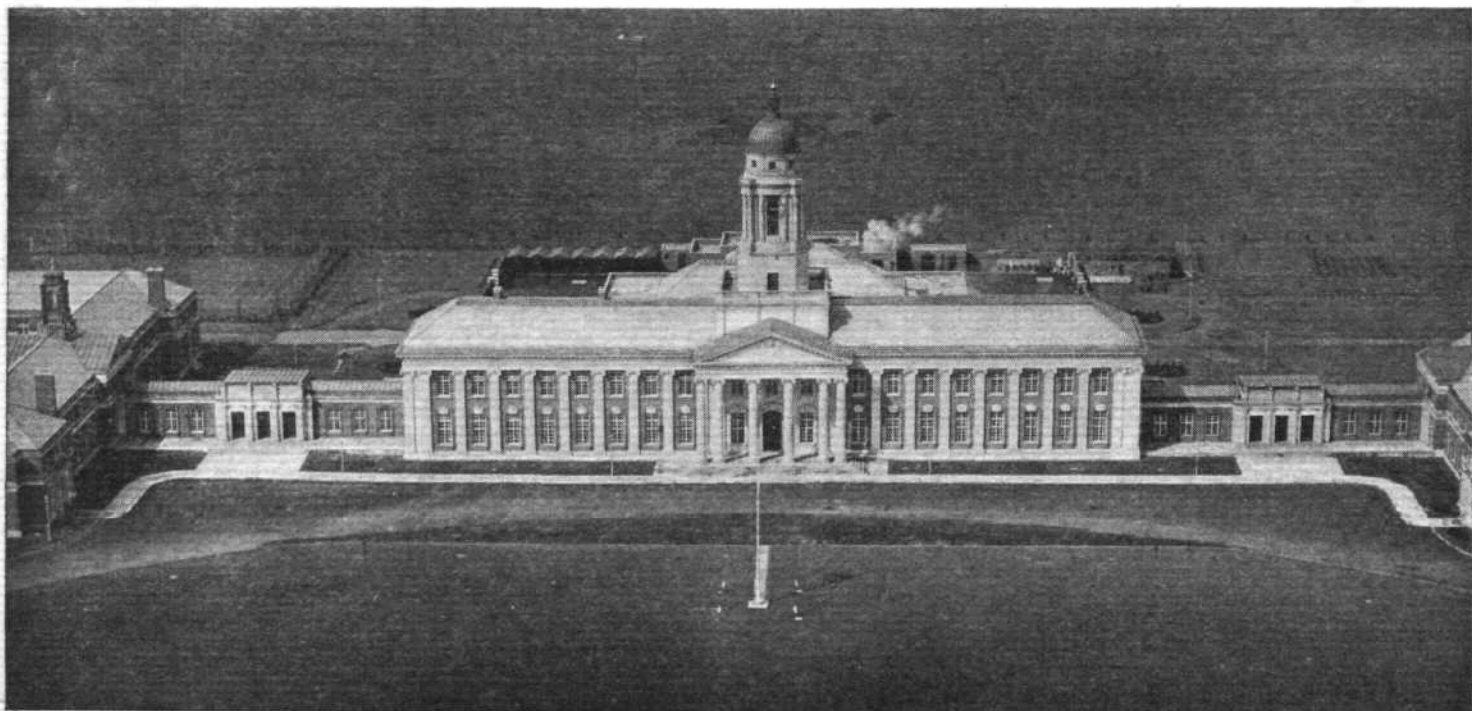
His Royal Highness is notoriously a man who thinks deeply on many subjects, and in all the many speeches which he makes there are few in which he does not express views which no private secretary could put into his mouth, and which are invariably distinguished by clear thinking and sound common sense. Last week, when addressing the flight cadets at Cranwell College, he said, "You have joined a great Service, and though the Royal Air Force is the junior Service, it, along with the Navy

and the Army, makes for confidence, not only throughout the Empire, but throughout the world—a confidence which is of vital importance and will continue to be of vital importance until the make-up of the world changes very radically."

These are very welcome words, and they come from one whose opinions always command respect. There has been much talk in the press and elsewhere of the danger caused to civilisation by the coming of air forces. We should not deny the possibility that some air forces may constitute a menace, but only when they are controlled by politicians with ambitions for conquest. No one could lay such a charge against the British Air Force. It exists for defence, and defence alone. The British Empire has no desire for conquest. On the contrary, two countries in which the Air Force has a special interest, Egypt and Iraq, have been deliberately set upon their own feet by the influence of Great Britain since the Armistice. Both of them have now their own kings, and both are members of the League of Nations.

In what the Prince calls the present make-up of the world, when a nation which has no desire but for peace (peace with honour, of course, not peace at any price) is weak, that weakness shakes the confidence of the whole world. When the men of good will are weak, who can stand up to resist the aggressions of the unrighteous? When Great Britain is strong, the whole world feels safer. Her strength makes for confidence. When Great Britain is strong, the slave trader trembles and the slave goes free. The would-be disturber of peace thinks twice before he embarks upon his fell designs. Those who have cause to fear aggression begin to sleep more soundly at night; and as nervousness is soothed away, so does the danger of a conflagration grow more remote.

To speak of the British airman or sailor or soldier as a "licensed murderer" is a foul slander. Each of them exists to uphold justice and peace. It is well indeed that the National Government is increasing the armed strength of Great Britain, and it is well that the Prince of Wales has spoken out and made it plain to the doubters that our fighting Services make for confidence, not only throughout the Empire but throughout the world.



IMPOSING: Cranwell College from the air. An account of the opening by H.R.H. the Prince of Wales appears on page 1097. (*Flight* Photo.)

The Outlook

A Running Commentary on Air Topics

Trade Follows Records

ON the eve of the greatest long-distance air race which has ever taken place the hopes of all Britons turn towards the three or four British entries. One of these machines, we fervently hope, will win the speed race. Hope, however, is far removed from assurance, and the chances are so many on the Mildenhall-Melbourne course that prophecy would be vain and betting a folly. We should not dream of counting our chickens before they are hatched. But—if a Briton should win, the feat would set British aircraft design upon a pinnacle of glory and would have far-reaching effects.

A couple of years ago the British aeronautical star (not then a comet) was very much in the ascendant. We held the three F.A.I. records which really matter, namely, speed, distance and altitude. Now all those three have gone abroad, and foreign buyers who are apt to judge national designing ability by success in record-making were left free to assume that British design no longer held first place. The Royal Air Force has not been allowed to make any attempt to recover any of the three, two of which had been established by the Service. Financial stringency has been the official excuse for letting these three records go abroad without a British attempt to recover them. In times of real depression such an excuse has to be accepted. When a measure of prosperity has returned the matter should be reconsidered. To economise by letting these records go seems to us like the case of a farmer who economises by not buying seed for his next year's crop.

The Atlantic record of passenger steamers also affords an analogy. The German *Bremen* beat the British *Mauretania*, and then lost the Blue Riband to the Italian *Rex*. It is hoped that the *Queen Mary*, built partly by a Government subsidy, will bring the Blue Riband back to this country. On the Atlantic it is acknowledged that trade follows the holding of that distinction. In export of aircraft, trade also follows the holding of records. If we win the MacRobertson race our prestige will be greatly enhanced, but we should not rest content with that. The records for speed, altitude and distance ought to be recovered for Great Britain.

Re-Equipment

AT long last a decision has been taken about the new equipment for No. 202 (Flying Boat) Squadron. This squadron is stationed at Malta, and for more years than most people can remember it has been flying Fairey 3F floatplanes, which have been described in the *Air Force List* as "temporary" equipment. Certainly some very fine work has been done with the Fairey floatplanes, but a flying boat squadron without flying boats has been an anomaly. Why the squadron was not given "Southamp-ton" years ago is one of the mysteries which the future historian of the R.A.F. will find it hard to explain. However, to come to modern history, there was talk about a year ago of moving No. 202 Squadron back to home waters and replacing it at Malta with No. 209 (F.B.) Squadron when it had changed its "Iris" boats for "Perths," and finding boats for No. 202 when it had reached Mount Batten. Then, for some technical reason, it was decided not to send the "Perth" squadron to the Mediterranean, so No. 202 continued to rest on twin floats for a further period, while the Air Ministry cogitated on the situation.

Now, at last, it is announced that the long-enduring No. 202 Squadron is to get the Supermarine "Scapa" with two "Kestrel" engines, and to get it within the next few months. There will be rejoicing in the messes at Calafra, for the "Scapa" is a very fine flying boat, with good speed, good load, and good endurance. Perhaps some of the fitters who have to perform the toilets of the two "Kestrels" perched aloft beneath the upper planes may sigh for the brave days of old, but the pilots will scour the Mediterranean with a new sense of power, and a very great joy.

It is also announced that No. 36 (Torpedo-Bomber) Squadron is to shed its time-honoured "Horsleys" and their not-so-well-beloved "Condor" engines in favour of "Vildebeests" with "Pegasus" engines. This will make the landplane station at Singapore homogeneous, for No. 100 (Bomber) Squadron, which shares the station with No. 36 B.S., already has the "Vildebeest." The "Wapiti," after doing fine work for a number of years, is now giving place to the "Vincent" and "Hardy" out East, and to the "Hart" in this country. No. 84 (Bomber) Squadron at Shaibah, near Basra, was the first squadron to get the "Wapiti," and it is now to have the "Vincent." No. 605 (County of Warwick) (Bomber) Squadron is also shedding the "Wapiti," in favour of the "Hart."

Publication of Accident Reports

A FORTNIGHT ago we commented on the position as regards publishing the official reports on air accidents, and expressed the hope that there would be no delay in telling the public what the causes were (so far as they could be ascertained) of the three tragic crashes which took place within ten days. So far as we know, no report on any of the three has yet been published. Admittedly it takes a certain amount of time to examine all the wreckage, when there is wreckage to examine, and to deduce from the fractured parts what was the probable cause of the disaster. It is also understood that Major Cooper, the very able Inspector of Accidents at the Air Ministry, and his assistants are unfortunately over-busy. If so, that department ought to be strengthened, even at the risk of thoughtless critics complaining that money is being spent on Air Ministry officials instead of upon practical flying. Promptness in publication of accident reports has a direct bearing on public confidence in air transport. The public memory is long as regards generalities but short as regards precise facts. If too long a time has elapsed between an accident and the official explanation of the cause, the public will have forgotten all the details of the accident and will take but a passing interest in reading the report. Many people will, nevertheless, carry away a general impression that "these aeroplanes are very dangerous things: they are always crashing and killing people." The way to counter that way of thought is to get out a simple explanation of the accident while the event is still fresh in the minds of readers of newspapers. Recommendations for preventing a repetition of that particular sort of accident should accompany the report. Even sympathy for the relations of a pilot who has made an error of judgment should not curtail the frankness of the publication. If pilots need more training in, say, instrument flying, before being given charge of a passenger aeroplane, let that be said openly, and let steps be taken to put the matter right. In that way will public confidence in air transport be restored.

THE ENGLAND-AUSTRALIA RACE

MAKING READY

at

MILDENHALL

Events and Arrivals at Mildenhall prior to the Start of the Great Adventure: Nineteen Machines Present Last Tuesday Evening

WITH the elaborate marquees flapping and billowing, two most capacious and entirely empty hangars, and hordes of officials, white-overalled mechanics, and yawning waiters, Mildenhall Aerodrome had taken on a rather dismal aspect by the time dusk was falling last Saturday—the first day of the “reception.” It was something like a Derby Day without a racehorse.

Nobody really expected many machines, but everybody hoped that some would come along. After all, Sunday might provide virtually impossible flying weather, and the Royal Aero Club might or might not give the entire entry a time extension.

Slowly the quite appreciable number of disappointed hedge-watchers drifted away, and an evening haze blotted out the trees on the flat horizon. The few remaining spectators wondered how many machines would turn up on the following day and whether the Aero Club would give definite extensions or not.

Then a machine was heard. After being to the watchers a mere high-wing monoplane, it became quite obviously a Mark II Desoutter. Lt. Michael Hansen had flown from Copenhagen, making a Customs stop at Lympne; a head wind had reduced his speed, for he had left at 9 a.m.

SIR MACPHERSON ROBERTSON, in a message of good will to the competitors, says: “Of the many factors to play their part in the high-speed race, the attempt to reach Melbourne from London in something like three days will inevitably call forth, in the highest degree, the skill, resourcefulness and endurance of pilots; the ingenuity and faithfulness of the aircraft and engine construction; the expert mechanical care of engines that must function almost non-stop half-way round the world; the sustained efficiency of refuelling services during day and night; and the close co-operation of wireless and meteorological stations along a course which crosses three continents and spans the seasons from autumn to spring.”



His red and black Hermes-Desoutter carried a spare Heine propeller carefully mounted against the port side of the cabin, with an extra tank on the starboard side and a petrol gauge just above and beside the pilot's seat. A reciprocating hand pump is fitted to transfer the fuel to the standard gravity tank in the cantilever wing. Above this tank, incidentally, is mounted the venturi for the turn indicator. Lt. Hansen carried two compasses.

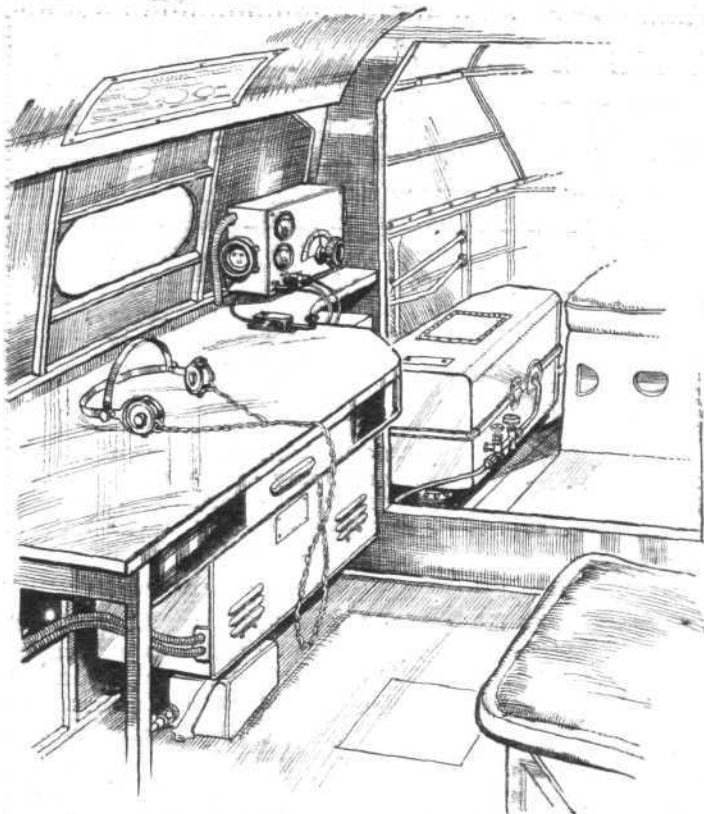
Almost immediately afterwards an unfamiliar drone brought everyone out to watch the diminutive clipped-wing Lambert Monocoupe, *Baby Ruth*. Jack Wright brought it round the aerodrome boundary in true pylon-racing style and not at all according to rules and regulations, and put it down a trifle

frighteningly in the gathering darkness. According to Wright, *Baby Ruth* is named after a candy bar (whatever that may be) in the United States!

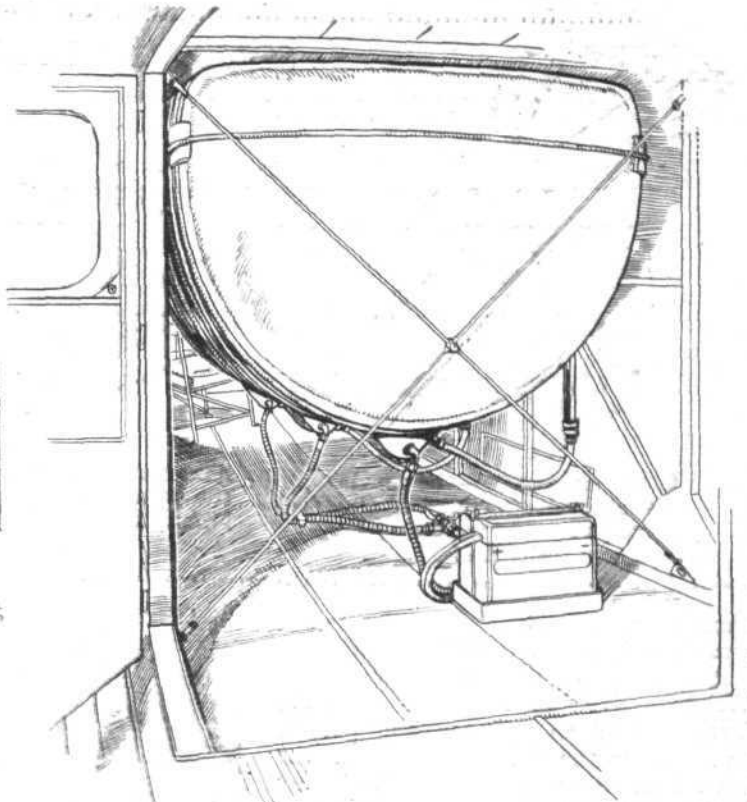
The Monocoupe was worth inspection, for it was the machine in which Wright had broken a world's record at 169.8 m.p.h. Since that time its fuselage shape has been altered and a 145 h.p. Warner “Super Scarab” fitted in place of the original “Scarab,” so the maximum speed can be expected now to be something a good deal higher than three miles a minute.



ONE OF THREE: The second “Comet,” entered by Mr. A. O. Edwards and flown by C. W. A. Scott and T. Campbell Black, is taxied up to the big hangar. (Flight Photo.)



COMPLETE EQUIPMENT: An interior view of Capt. Stack's Airspeed "Viceroy," showing the wireless equipment, the chart table, and, in the pilot's department, the P.B. Automatic Pilot.



TANKAGE: There are three of these "semi-cylindrical" tanks in the fuselage of Kay and Hewett's "Dragon Six"; together they hold approximately 230 gallons of fuel.

In its Australia Race guise the machine has an N.A.C.A. cowling, without baffles, and a Hamilton metal propeller. The instruments are Pioneer for the most part, with the venturi mounted between the two upper cylinders, and the gauges for the large fuselage tank and for the two small gravity tanks are quite among the neatest—reminiscent of those fitted to the gravity-tank Ford cars. Wright gave the present range as being in the vicinity of 1,000 miles.

So now there were two machines.

Broadcasting House had been more than depressing about the weather ahead, and on Sunday morning a strong and cold wind swept the aerodrome. Spectators arrived in their legions for the doubtful pleasure of seeing a dozen racing machines flying and taxiing in the distance, and a few of the luckier—or more brazen—among their number obtained means of ingress to the sacred precincts.

There were rumours and rumours. The Mollisons had

been offered, or had asked for—nobody was quite certain—£30,000 to fly the assassination film across the Atlantic, but were checking in "just in case"; Lombardi had left Italy with an incredibly fast Bergamaschi; Lombardi had scratched his entry; and so on. In the meantime, representatives of the Press did their work amidst a clamour of new restrictions and in a shower of special passes.

C. J. Melrose had arrived with his cleaned-up "Puss Moth"—actually the machine in which he had flown from Australia in record time. In racing form *My Hildegard*, as it is called, is fitted with spats, a Fairey metal propeller, and an extra tank giving a range of 1,200 to 1,300 miles. Both air brake and wing-folding fittings have been removed and the engine is a Gipsy Major—unusual in a "Puss Moth"—with stub exhausts.

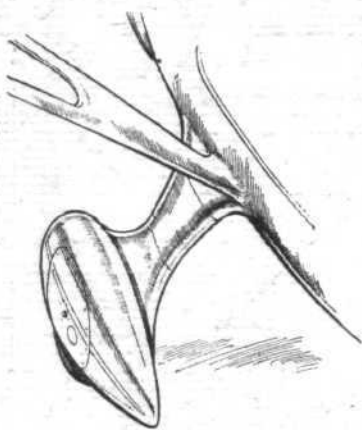
Mr. Melrose claims that his "race" will be a sight-seeing tour, and he proposes to take twelve or thirteen

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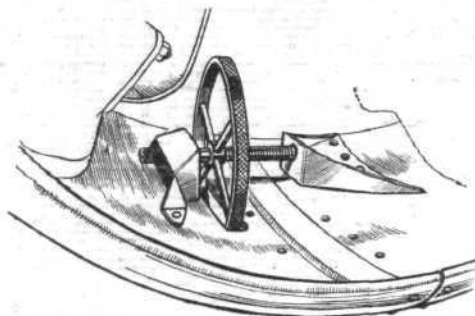


STRAIGHT FROM THE SHOP: The Miles "Falcon" was only delivered to Mr. H. L. Brook on Saturday. Note the position of the extra tank filler cap.

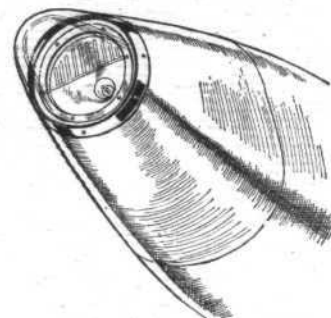
SOME INTERESTING DETAILS



Clean simplicity—the cantilever undercarriage of the Lambert Monocoupe, "Baby Ruth."



Another "Baby Ruth" detail—the hand-wheel which clamps the N.A.C.A. cowling; its rim projects through the slot.



Central headlamps are not a monopoly of trams—the three D.H. "Comets" are so equipped for night landings.

days over the trip. His machine is considerably faster than standard.

After the sky had been nicely aired Wright and Polando wheeled out *Baby Ruth*, talked to the newsreel people, and "took the ship up to show the boys a thing or two." Wright knows how to handle a machine for the benefit of photographers, and the Monocoupe is a most agile thing in the air. His zooms were vertical and his half-rolls-cum-stalled-turns admirable in the eyes of the spectators, if not of the officials, who were expecting the first D.H. "Comet."

The "Comet" was, in fact, circling Mildenhall as Wright taxied his Monocoupe in, and the keener-eyed claimed it as Number Nineteen, flown by Lt. Cathcart Jones and Mr. Ken Waller. Immediately the machine had touched—after a faintly lurid moment in the strong wind—the crowd swarmed towards the tarmac. The "Comet" had apparently made the fifty-mile journey from Hatfield in about fifteen minutes. For the race the "Comets" have Ratier variable pitch airscrews, a change that has been necessitated by the question of engine cooling.

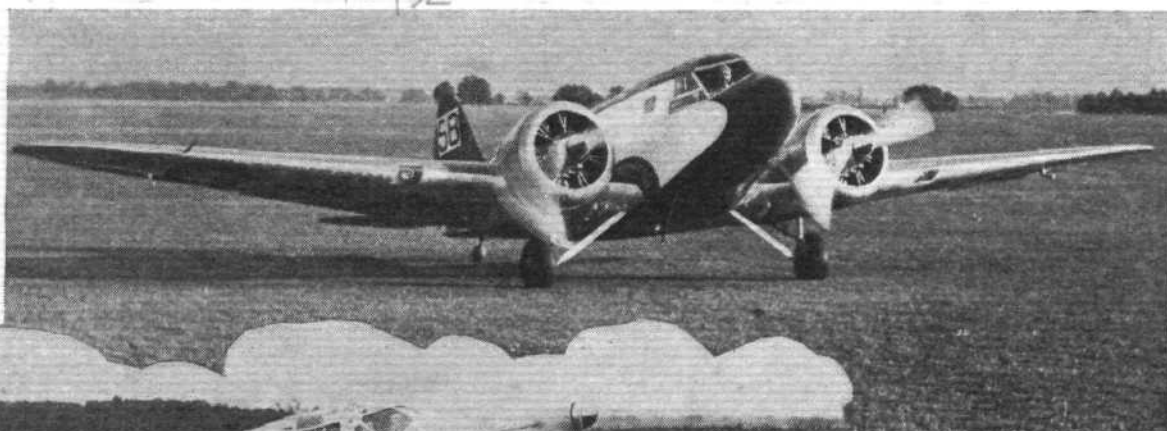


BONFIRE: Mr. J. J. Jeffs, supervises some rough-and-ready wind indication.

miles at a speed of 140 m.p.h.

It is worth remembering that the III F. has seen service all over the world. This particular one has a tropical radiator, and the rear of the aft cockpit (where the gun mounting normally appears) is covered. Incidentally, too, the III F. had flaps—or "variable camber gear"—long

(Right) ENTER THE "VICEROY": Capt. Stack taxis the Airspeed "Viceroy" (two supercharged "Cheetahs") towards the apron. (Flight Photo.)



(Left) SPIRITUAL: Flt. Lt. Shaw's British Klemm "Eagle," *The Spirit of W. Shaw & Co., Ltd.*, which is one of the most completely equipped machines in the race. (Flight Photo.)

"SKY-HOOKS" at Southampton for Mr. Clyde Pangborn's "Gee Bee" (Pratt and Whitney "Hornet"), to be flown by Miss Jacqueline Cochran.

before people thought of split flaps or air brakes.

At lunch-time the third lightly loaded "Comet" made its preliminary circuits, and lowered its undercarriage. Everybody ran out to see the Mollisons bring it in. Approach number one seemed to be a little on the high side, and the machine was allowed to touch with a lot of flying speed when the buildings were too near for peace of mind. Mollison opened up and went round again. On the second attempt he touched again on the ridge far up the aerodrome, hung for an interminable period some ten or twenty feet up, opened up and flew for several heart-stopping moments with the "Comet's" tail, so to speak, between its legs, apparently missing the buildings only by making a gentle turn. On the third attempt all was well. But the watchers thought rather of all the considerably smaller aerodromes on the way to Melbourne and of the night landings to be made.

This machine is fitted with two Sperry Artificial Horizons, two Sperry Directional Gyros, two compasses, two A.S.I.s, and a fore-and-aft level. Each "Comet," incidentally, has a boost gauge for the forward-facing intake pressure, and landing lights in the nose.

By contrast, Capt. Stack's approach and landing with the Airspeed "Viceroy" seemed a ridiculously simple business. This was the most completely equipped machine that had so far been seen at Mildenhall. Apart from the special fuel arrangements, it has Plessey two-way wireless equipment, the latest P.B. Automatic Pilot, and a pair of landing searchlights in the leading edges. All the usual navigation instruments are supplemented by an adjustable drift indicator in the floor of the cockpit.

Sqd. Ldr. D. E. Stodart's Airspeed "Courier" came in almost immediately afterwards, and both the Australian D.H. "Dragon Six" and Capt. Malcolm McGregor's Miles "Hawk Major" arrived before the official day closed. Then it was learnt that eleven machines had been given extensions, these being Roscoe Turner's Boeing, Geysendorfer's Pander S.4, Fitzmaurice's Bellanca, Parmentier's Douglas D.C.2, Jacqueline Cochran's "Gee Bee," Molinier's Blériot, and Penny's Vultee among the "foreigners," and Lowdell's "Envoy," H. L. Brook's

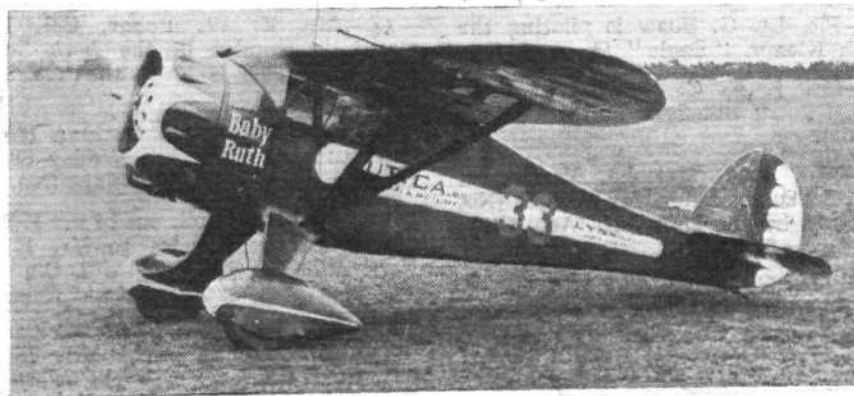
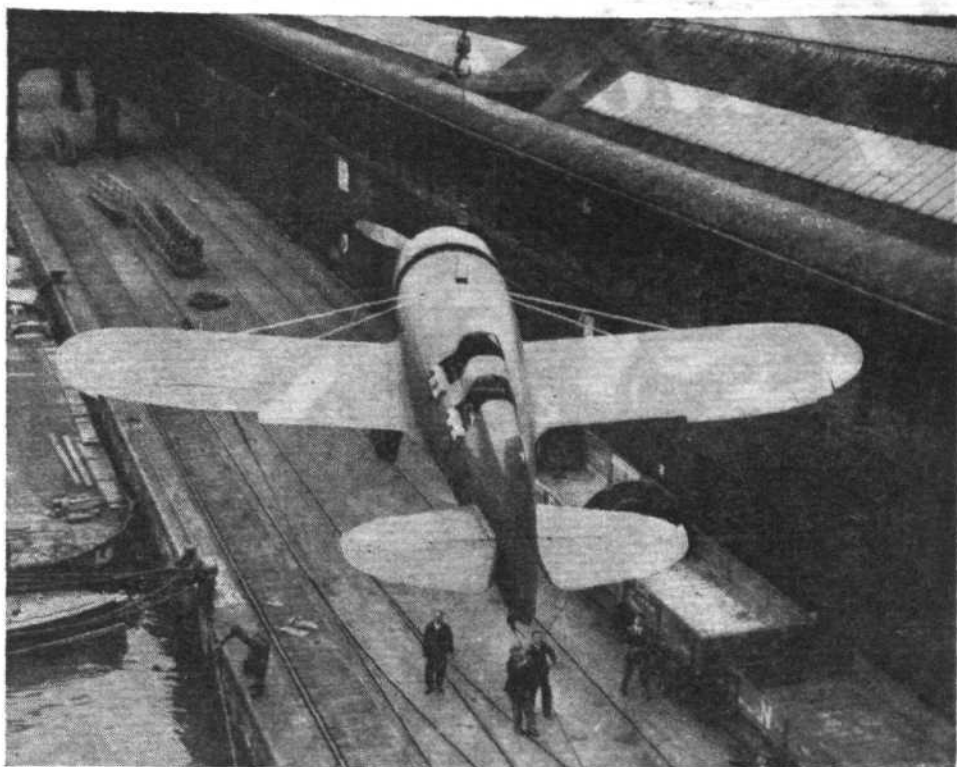
"Falcon," and Parer's and Baines' "Foxes." But where were the others?

Apparently Woods had damaged the undercarriage of his Lockheed "Vega" at Heston, but neither he nor Lombardi were to be disqualified if they arrived at Mildenhall before the limit day.

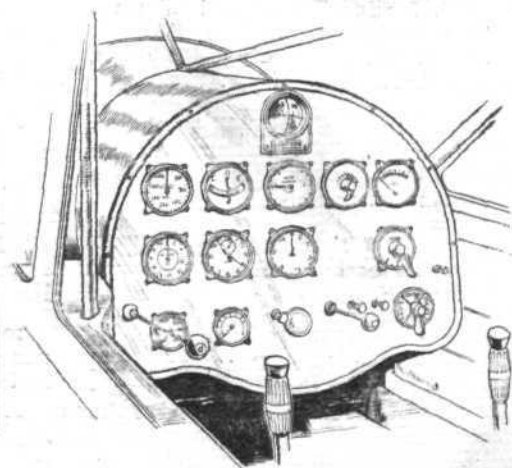
It appeared as if there were to be only one arrival on Monday—Mr. H. L. Brook, with the Miles "Falcon." He will take with him Miss E. M. Lay, who has an "A" licence but has only done sixty hours' flying, to share the expense. The engine in Brook's machine is, incidentally, the Gipsy Major out of the Mollinson's "Puss Moth" *Heart's Content*, and the machine was only delivered on Saturday.

However, Campbell Black, Stack and Shaw flew their machines, "Jimmy" Jeffs discovered a 3ft. by 3ft. hole in the aerodrome and marked it with obstruction flags, and two "Comets," Scott's and Cathcart Jones', went through their weighing tests. Apparently they were a little overweight owing to the higher specific gravity of the fuel used.

Then, just as dark was falling, Woods arrived in his all-white Lockheed "Vega," and, without making a preliminary circuit, landed far up the aerodrome. Evidently Heston had worked hard on the machine.



WITH "CLIPPED" WINGS: The Lambert Monocoupe (Warner "Super Scarab") to be flown by Wright and Polando; Wright gave a spectacular demonstration—much too spectacular for the officials—on the morning after his arrival at Mildenhall. (Flight Photo.)



INSTRUMENTAL: The layout in "Baby Ruth" is quite exceptionally tidy.



A Portrait Gallery of Competitors, the Majority of Whom are at Present Likely to Start

(The numbers at the beginning of each paragraph refer to the portraits above.)

1.—Col. Roscoe Turner will pilot the American Boeing monoplane (No. 5). His co-pilot will be Mr. Clyde Pangborn, of long-distance record fame.

2.—Mr. Henry Walker will be the co-pilot of Sqd. Ldr. MacGregor in the Miles Hawk Major (No. 2). This is a New Zealand entry.

3.—John H. Wright is flying the little American Lambert Monocoupe (No. 33) named *Baby Ruth*. His co-pilot will be Mr. Polando.

4.—Mr. Jensen is a Dane, and will share the piloting of the Desoutter monoplane (No. 7) with Lt. M. Hansen, of the Danish Army.

5.—Mr. George Lowdell, who will be accompanied by Flt. Lt. D. F. Anderson, is the chief pilot of Lord Nuffield's Airspeed "Envoy" (No. 3).

6.—Mr. John Polando, who will be John Wright's co-pilot in *Baby Ruth*.

7.—Flt. Lt. G. Shaw is piloting the British Klemm "Eagle" (No. 47).

8.—Mr. J. K. C. Baines and F/O. H. D. Gilman will fly a Fairey "Fox" (No. 62).

9.—Sqd. Ldr. Malcolm MacGregor, chief pilot of the Miles Hawk Major (No. 2) entered by the Manawatu Aero Club, New Zealand.

10.—Mr. K. G. Stodart will accompany his uncle, Sqd. Ldr. D. E. Stodart, in the Airspeed "Courier" (No. 14).

11 and 12.—Mrs. and Mr. J. A. Mollison will pilot one of the De Havilland "Comets" (No. 63).

13.—Mr. J. D. Hewett, who, with Mr. C. E. Kay, will fly the D.H. "Dragon Six" (No. 60) entered by the president

and members of the New Zealand Air Race Committee.

14.—Mr. E. W. Bonar, Col. Fitzmaurice's co-pilot in the *Irish Swoop* (No. 29). This is an Irish Free State entry.

15.—Miss Jacqueline Cochran (American) and her pilot, Mr. Wesley Smith, will fly the Granville monoplane (No. 46).

16.—Mr. J. J. Moll, one of the K.L.M. pilots, will be co-pilot to Mr. K. D. Parmentier in the Douglas D.C.2 (No. 44)—a Dutch entry but an American machine.

17.—Lt. Hansen is the only Danish entrant in the race. He will be flying a Desoutter monoplane (No. 7).

18.—Mr. C. W. A. Scott is flying over a route he has flown several times. With Mr. Campbell Black he will pilot "Comet" (No. 34).

Australia Race



19.—Mr. T. Campbell Black, Scott's co-pilot in No. 34.

20.—Mr. Jimmie Woods, an Australian, will fly the Lockheed Vega (No. 36), which formerly belonged to the late Lt. Com. Kidston.

21.—Mr. K. D. Parmentier, chief pilot of the Douglas D.C.2 (No. 44). Like his co-pilot, Mr. Parmentier is one of the K.L.M. pilots.

22.—Herr Wolf Hirth was the only German entry, but his machine, a Messerschmitt monoplane (No. 1), has been scratched.

23.—F/O. H. D. Gilman will be co-pilot to Mr. Baines in a Fairey "Fox" (No. 62).

24.—Mr. H. L. Brook is flying a Miles

"Falcon" (No. 31). He will be accompanied by Miss E. M. Lay.

25.—Mr. "Ken" Waller will be the co-pilot of Lt. Cathcart Jones, R.N., in the De Havilland "Comet" (No. 19).

26.—Mr. C. J. Melrose is flying the same "Puss Moth" (No. 16) in which he recently flew from Darwin to London in record time (8 days 9 hours).

27.—Col. J. C. Fitzmaurice, chief pilot of the Bellanca monoplane *Irish Swoop* (No. 29).

28.—Mr. Clyde Pangborn, Col. Roscoe Turner's co-pilot in the Boeing monoplane (No. 5).

29.—Capt. T. Neville Stack is chief pilot of the Airspeed "Viceroy" (No. 58). His is the only British entry to

have supercharged engines (Siddley "Cheetah VI").

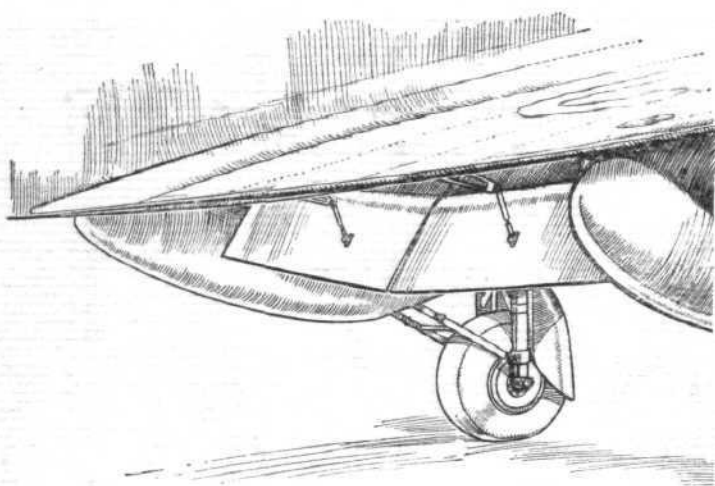
30.—Lt. Com. C. N. Hill, R.N., will be co-pilot to F/O. C. G. Davies in the Fairey III F. (No. 15).

31.—F/O. C. G. Davies, chief pilot of the Fairey III F (No. 15).

32.—Mr. C. E. Kay, the co-pilot of Mr. J. D. Hewett, in the De Havilland "Dragon Six" (No. 60).

33.—Mr. S. L. Turner will assist Capt. T. N. Stack in piloting the Airspeed "Viceroy" (No. 58).

34.—Lt. O. Cathcart Jones, R.N., chief pilot of "Comet" No. 19. Mr. Bernard Rubin was to have flown this machine, but was taken ill.



SHORTENING THE APPROACH: One of the split flaps on the "Comet." These are raised and lowered by a lever on the left of the first pilot.

(Continued from page 1077.)

Three of the "big fellows" arrived on Tuesday from Martlesham Heath, where they had been weighed—the scales at Mildenhall being unable to cope with them. These were Col. Roscoe Turner's Boeing Transport, the K.L.M. Douglas D.C.2, and the "syndicated" Pander Postjager. Things were looking altogether brighter.

With the Boeing came Clyde Pangborn, Nichols, the wireless operator, and a mechanic, Don Young, but the last-named will not be one of the race crew. The machine has an American licence for 950 gallons of fuel, but it seems that they will not be able to carry all that as Martlesham thinks that it cannot go over the "screen" with the load.

The tanks are arranged along each side of the fuselage interior with a gangway between, and very complete wireless and direction-finding equipment is installed. Both the Union Jack and the Stars and Stripes are painted on the machine, so there we are. A designer of a rival machine, incidentally, was very impressed, and considered that it has an excellent chance if only because it has been so thoroughly tried out in service on the American air lines.

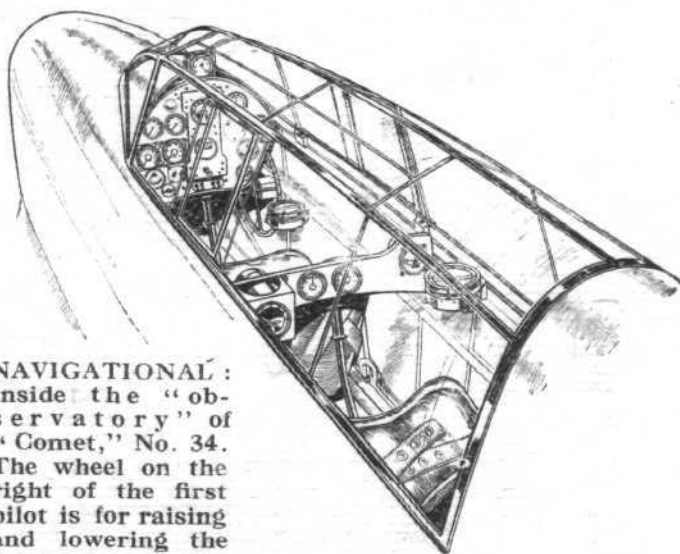
In the Douglas there will be a crew of four, including Parmentier and Moll, three male passengers, and Fräulein Thea Rasche.

Woods' Lockheed "Vega" has a Hamilton variable-pitch propeller and long-range tanks, of course, in the cabin. It has been re-named *Puck*.

One more machine, Parer's Fairey "Fox," arrived on Tuesday carrying an extra tank faired in below the fuselage. Its endurance is, apparently, between six and seven hours, so its range will be in the vicinity of 1,000 miles. A Dove "Cloutring" is fitted by way of a blind-flying instrument, so this interesting device will receive a very thorough testing.

On Monday one of the "Comets" was, as stated, discovered to be very slightly overweight. Apparently all three were weighed at Hatfield under A.I.D. supervision, and all were within a few pounds of the permissible maximum. At Mildenhall two were within 12 lb., but No. 19 was nearly 100 lb. overweight. Perhaps the scales at Mildenhall do not read quite the same, but, in any case, the weights were calculated with fuel of 0.76 specific gravity, whereas that supplied was 0.78. The correct fuel has now been supplied—a pretty fair piece of team work by the petrol company concerned.

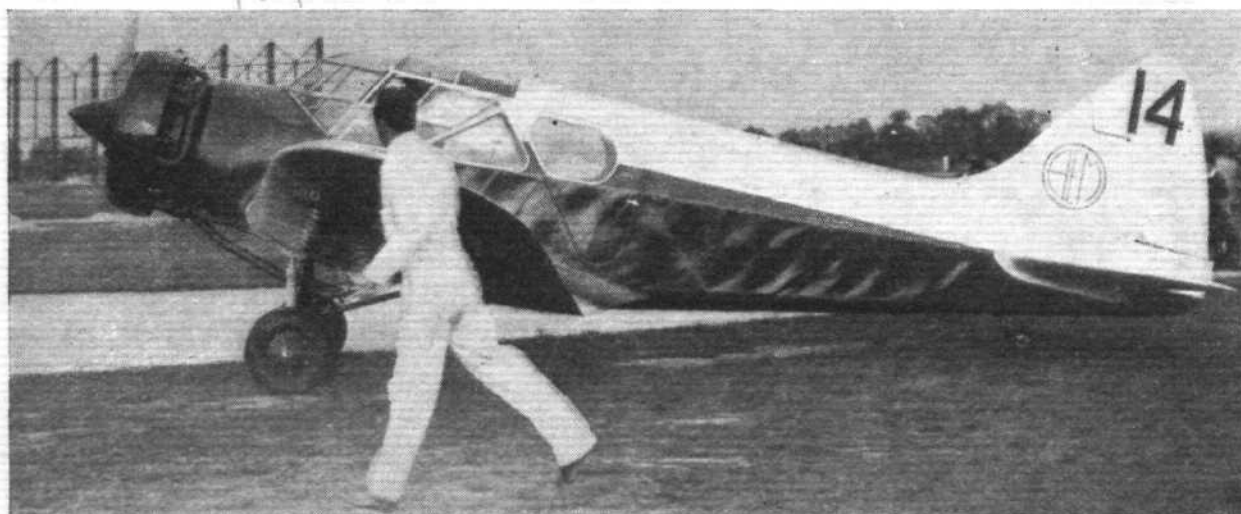
Mr. C. C. Walker is very satisfied with the machines, but is only sorry that they were not delivered soon enough to give the pilots a chance to gain experience. The Mollisons, incidentally, had some landing and approach



NAVIGATIONAL: Inside the "observatory" of "Comet," No. 34. The wheel on the right of the first pilot is for raising and lowering the undercarriage.

practice on Tuesday, and have named their "Comet," very aptly, *Black Magic*. They have rather a flair for machine names. While on the subject, the New Zealand "Dragon Six" is named *Tainui* after the first Maori war canoe to reach New Zealand.

Hewitt gives the "Dragon's Six's" range as about 1,000 miles, and he is carrying Plessey wireless equipment.

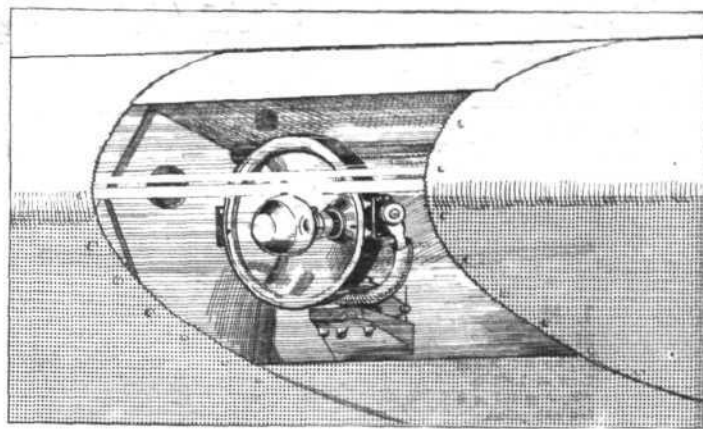


THE "COURIER" IN THE RACE: Sqd. Ldr. Stodart's Airspeed "Courier" coming up to the hangar on Sunday afternoon. This machine arrived immediately after the "Viceroy." (Flight Photo.)

On the whole, Tuesday was a fairly unpleasant day, with a bitterly cold wind, and everyone was a little tired of the petty restrictions. Some of the competitors had their emergency rations checked; each machine must carry one and a half gallons of drinking water, and, vaguely enough, sufficient food to keep the crews' bodies and souls together for three days.

Just as everybody had ceased to stand in an expectant attitude Col. Fitzmaurice brought in the *Bellanca Irish Swoop*.

So on Tuesday night it appeared that there would be nineteen, at least ready for the start on the great day, and many of the most interesting entries were among them. Miss Jacqueline Cochran's "Gee Bee" was in England, at least, George Lowdell's "Envoy" was expected, and the Bleriot III entered the testing centre at Villacoublay at five o'clock on Saturday. Whether this machine and the Bergamaschi will arrive, and whether Pond's Vultee will be flown across the other pond remains to be seen—as do a great many other aspects of this truly remarkable race.



ON THE "VICEROY": One of the landing search-lights which are mounted inside the leading edges on the Airspeed "Viceroy." The aperture is transparently covered.

IN THE FAR EAST

A Demonstration and Display by British Aircraft at Shanghai : The Far East Flying Training School in Action

A DISPLAY of British aircraft was given at Hungjao Aerodrome, Shanghai, by the Far East Aviation Co., Ltd., on July 24. The display was originally to have been held on the previous Saturday, but the advent of a typhoon made this impossible. Admission to the aerodrome was by invitation only, of which some 900 were issued, resulting in a crowd of some 2,000 being present! A large number of the important Chinese and British officials, including His Excellency Dr. H. H. Kung, Minister of Finance to the Nationalist Government, General Wu Teh Chen, Mayor of Greater Shanghai, Mr. Jabin Hsu, Mr. O. K. Yui, Sir John Brennan, British Consul General, Group Captain R. P. Willock, British Air Attaché, Brigadier General F. S. Thackery, O/C. British Forces, and Mr. A. H. George, Acting Commercial Counsellor to the British Legation, were present.

Two machines were used for the display, these being an Avro 637 Light Bomber, fitted with a Siddeley "Cheetah" engine, and a Fairey "Fox" Mk. IV High Performance two-seater reconnaissance fighter with a Rolls-Royce "Kestrel" ISS engine. Both machines were open to examination before the flying commenced, and a great many people availed themselves of the opportunity of seeing the latest types of British design and workmanship.

The flying programme was divided into three parts, each being described by means of loud speakers and illustrated programmes. Before the flying commenced the crowd was entertained by the Band of the Municipality of Greater Shanghai, and also was able to view a group of photographs illustrating the activities of the Far East Flying School, Hong Kong, and examples of metal work turned out by the Chinese engineering students of the school. These, incidentally, attracted a great deal of favourable comment.

The flying programme commenced at 5.45 p.m. with a brief display of aerobatics in the Avro 637 given by Lord M. A. Douglas-Hamilton, who is an instructor of the Far East Flying Training School. The second item was an exhibition of "crazy flying" by the same pilot and machine. This type of flying has not previously been demonstrated at a display in China, and created an enormous amount of comment.

The third event of the day was the demonstration of the



BRER FOX, HE FLY HIGH: A group of interested spectators round the Fairey "Fox," which gave demonstrations at Shanghai.

Fairey "Fox" by Flt. Lt. A. D. Bennett, Shanghai manager of the Far East Aviation Co., Ltd. The "Fox" for this flight was flown without a passenger, but had a full load of ballast instead, as well as full military equipment in the shape of radio, oxygen apparatus, front gun, etc., and so could not be called a special demonstration machine such as had been used for past exhibitions in China by other nations. This display, coming after that of the Americans and Italians with their single-seater machines, led many of the spectators to expect similar spectacular aerobatics, although from a machine flying under very different conditions. From start to finish they were not disappointed. A heavy black rain cloud was blowing up, and the climb after the take-off was rendered most spectacular by being terminated in this cloud at some 2,000ft. After that all manner of usual and unusual aerobatics followed, the one which impressed the spectators most being a vertical upward slow roll from ground level, terminating in the cloud, which had then blown over the aerodrome. Unfortunately, rain commenced falling heavily just before the flying was over, but that did not prevent the important Chinese officials remaining to witness a "dog fight" between the two machines as a finale, and tendering their thanks to all concerned for what they termed a magnificent display.

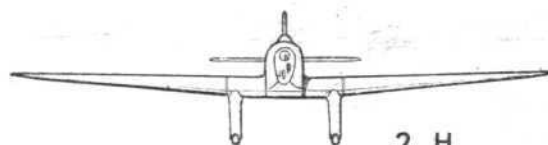
SOME HEAD-ON CONTRASTS AMONG

Scale Drawings that Emphasise Relative Dimensions, and

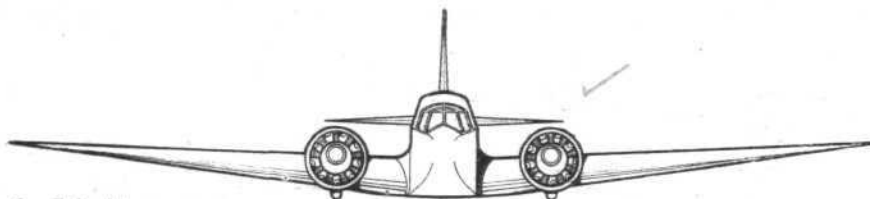
The numbers given below are the racing ones, while the abbreviations "H" and "S" refer to the handicap and the speed races respectively.



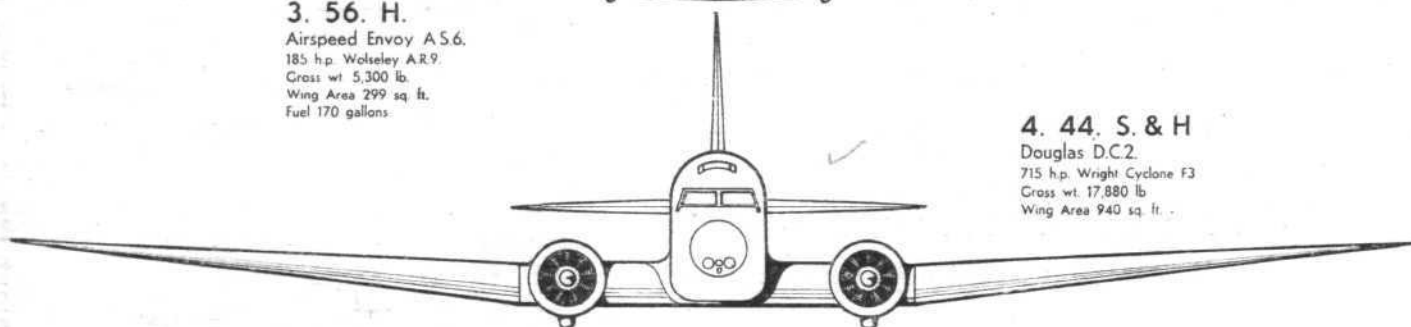
1. H.
B.F.W. ME-108
230 h.p. Hirth H.M.18a
Gross wt. 2,580 lb.
Wing Area 143 sq. ft.
Fuel 63.3 gallons.



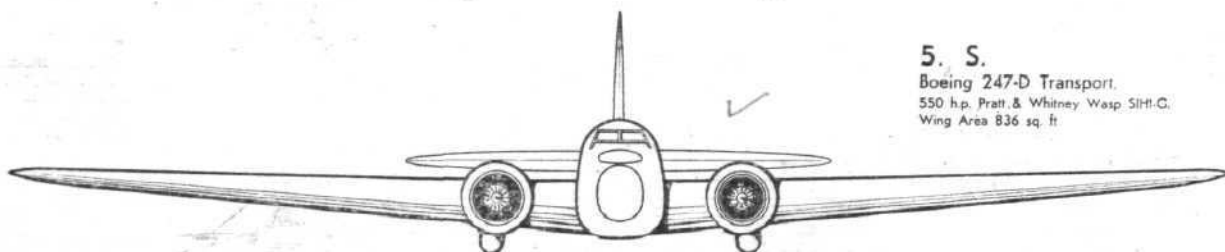
2. H.
Miles Hawk Major M2F
120 h.p. D.H. Gipsy Major
Gross wt. 1,900 lb.
Wing Area 169.5 sq. ft.
Fuel 52 gallons.



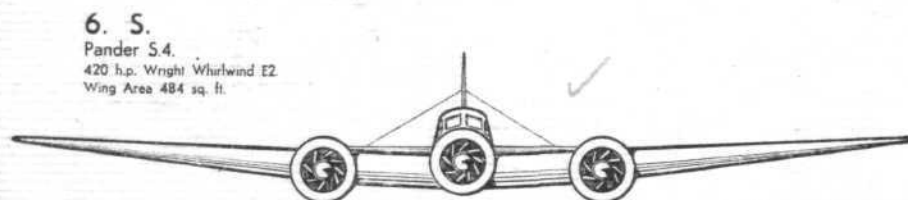
3. 56. H.
Airspeed Envoy AS.6.
185 h.p. Wolseley AR.9.
Gross wt. 5,300 lb.
Wing Area 299 sq. ft.
Fuel 170 gallons.



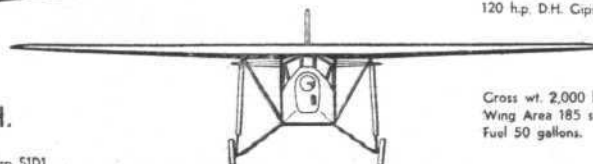
4. 44. S. & H.
Douglas DC.2.
715 h.p. Wright Cyclone F3
Gross wt. 17,880 lb.
Wing Area 940 sq. ft.



5. S.
Boeing 247-D Transport.
550 h.p. Pratt & Whitney Wasp S1H1-C.
Wing Area 836 sq. ft.



6. S.
Pander S.4.
420 h.p. Wright Whirlwind E2.
Wing Area 484 sq. ft.



7. H.
Desoutter Mark II.
120 h.p. D.H. Gipsy III.

Gross wt. 2,000 lb.
Wing Area 185 sq. ft.
Fuel 50 gallons.

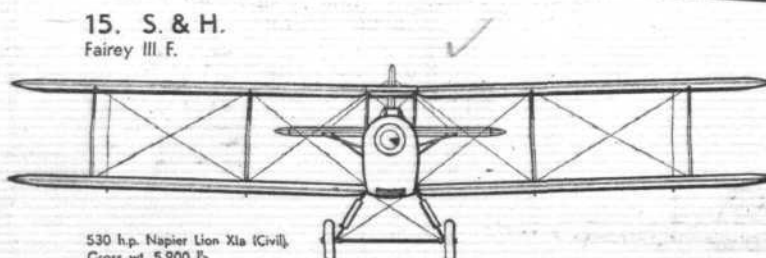
11. S. & H.
Lockheed Orion.
450 h.p. Pratt & Whitney Wasp SC1.
Wing Area 294 sq. ft.

32. 53. S. & H.
Lockheed Orion.
550 h.p. Pratt & Whitney Wasp S1D1.
Gross wt. 7,750 lb. Wing Area 262 sq. ft.
Fuel 500 gallons.



14. H.
Airspeed Courier AS.5.
270 h.p. Siddeley Cheetah V.
Gross wt. 4,100 lb.
Wing Area 250 sq. ft.
Fuel 129 gallons.

26. 52. H.
Airspeed Courier AS.5a.
277 h.p. Siddeley Cheetah V.
Gross wt. 4,000 lb.
Wing Area 250 sq. ft.
Fuel 151 gallons.



15. S. & H.
Fairey III. F.

530 h.p. Napier Lion X1a (Civil).
Gross wt. 5,900 lb.
Wing Area 438.5 sq. ft.
Fuel 187 gallons.

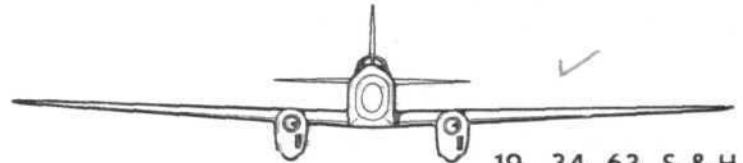


THE AUSTRALIA RACE ENTRIES

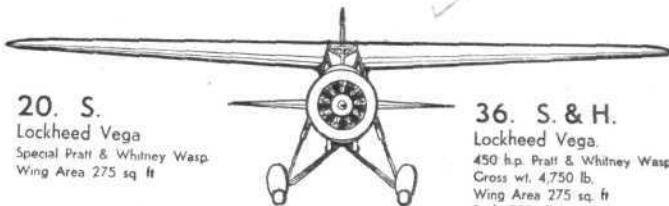
the Importance Attached to Head-resistance Reduction



16. H.
D.H. Leopard Moth.
130 h.p. D.H. Cipsy Major.
Gross wt. 2,200 lb.
Wing Area 206 sq. ft.
Fuel 70 gallons.



19. 34. 63. S. & H.
D.H. Comet.
225 h.p. D.H. Cipsy Six R.
Gross wt. 5,320 lb.
Wing Area 188.5 sq. ft.
Fuel 260 gallons.

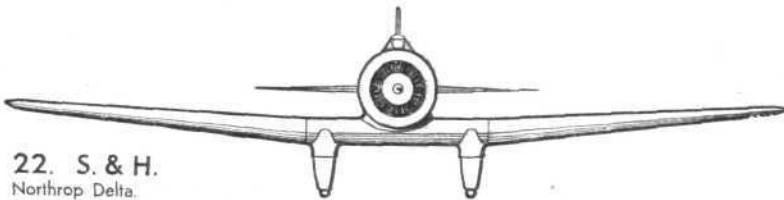


20. S.
Lockheed Vega.
Special Pratt & Whitney Wasp.
Wing Area 275 sq. ft.

36. S. & H.
Lockheed Vega.
450 h.p. Pratt & Whitney Wasp C.
Gross wt. 4,750 lb.
Wing Area 275 sq. ft.
Fuel 170 gallons.



21. H.
Percival Gull.
164 h.p. Napier Javelin III.
Gross wt. 2,450 lb.
Wing Area 169 sq. ft.
Fuel 95 gallons.



22. S. & H.
Northrop Delta.
700 h.p. Pratt & Whitney Hornet SD.
Gross wt. 7,350 lb.
Wing Area 363 sq. ft.
Fuel 266 gallons.

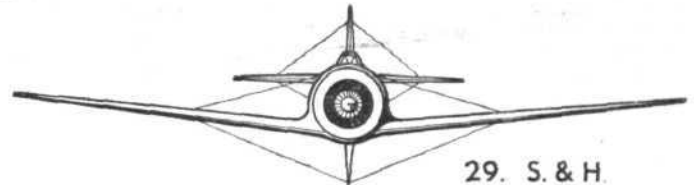


27. H.
D.H. Fox Moth.
130 h.p. D.H. Cipsy Major.
Gross wt. 2,000 lb.
Wing Area 247 sq. ft.
Fuel 50 gallons.



28. S. & H.
Lockheed Altair 8c.
550 h.p. Pratt & Whitney Wasp S1D1.
Gross wt. 6,300 lb.
Wing Area 265 sq. ft.
Fuel 350 gallons.

49. H.
Lockheed Altair.
550 h.p. Pratt & Whitney Wasp S1D1.
Gross wt. 6,500 lb.
Wing Area 294.1 sq. ft.
Fuel 400 gallons.



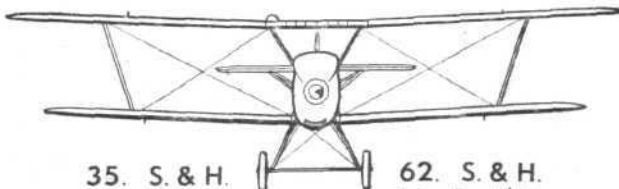
29. S. & H.
Bellanca Monoplane.
700 h.p. Pratt & Whitney Twin Wasp Junior SAC.
Wing Area 280 sq. ft.



31. H.
Miles Falcon M3.
130 h.p. D.H. Cipsy Major.
Gross wt. 2,000 lb.
Wing Area 282 sq. ft.
Fuel 44 gallons.



33. H.
Monocoupe 145.
145 h.p. Warner Super Scarab 40.
Gross wt. 1,690 lb.
Wing Area 100.8 sq. ft.
Fuel 44.2 gallons.



35. S. & H.
Fairey Fox Mk I.
450 h.p. Fairey Felix.
Gross wt. 4,300 lb.
Wing Area 366.6 sq. ft.
Fuel 150 gallons.

62. S. & H.
Fairey Fox Mk I.
430 h.p. Fairey Felix.
Gross wt. 4,200 lb.
Wing Area 366.6 sq. ft.
Fuel 150 gallons.



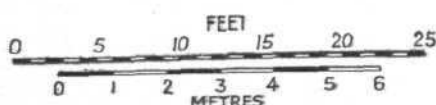
38. H.
Short Scion.
90 h.p. Pobjoy Niagara.
Gross wt. 2,850 lb.
Wing Area 255.5 sq. ft.
Fuel 64 gallons.



Harkness and Hillier Monoplane

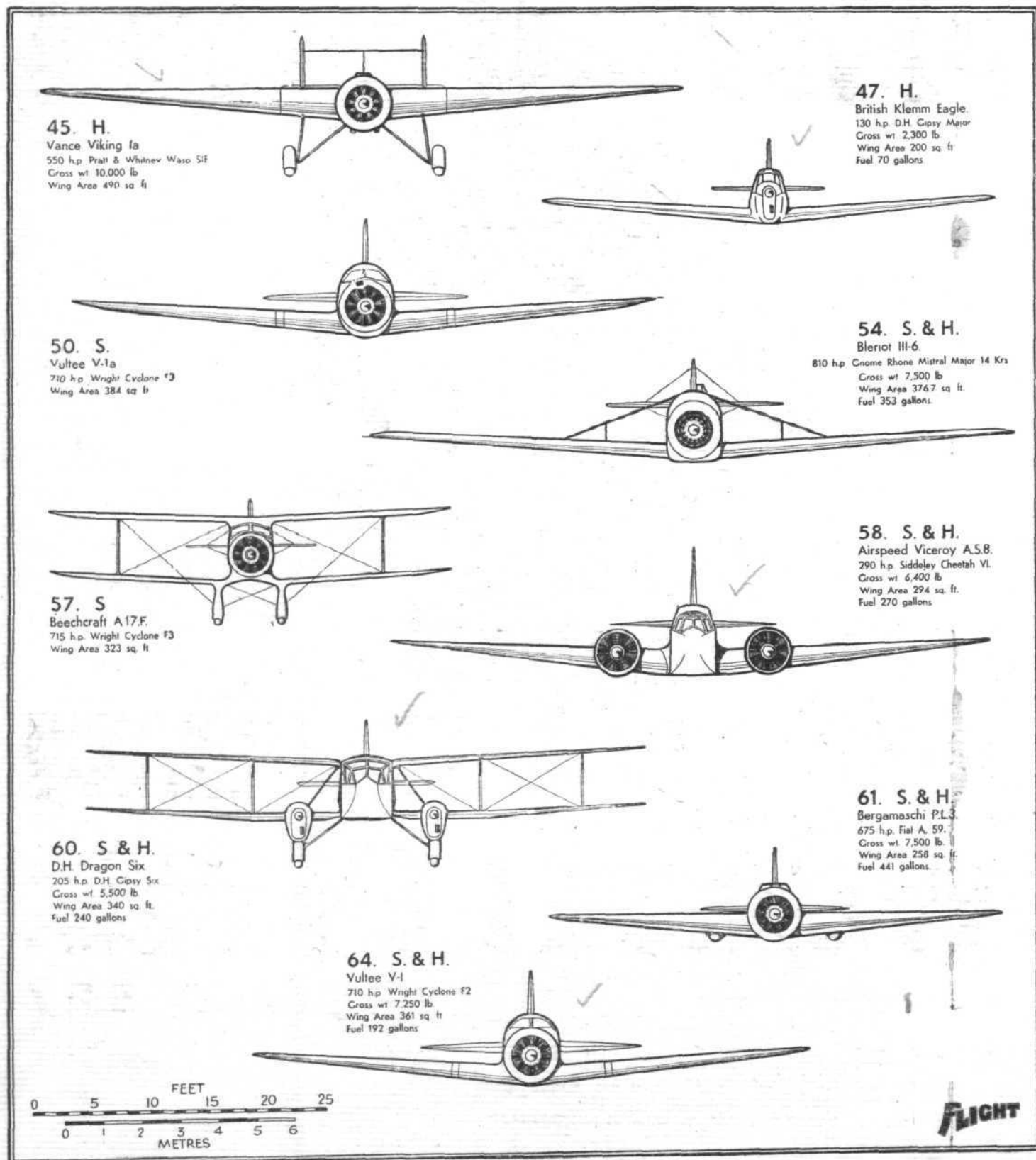
120 h.p. Hermes IV.
Gross wt. 2,780 lb.
Wing Area 145 sq. ft.
Fuel 140 gallons.

43. S. & H.



FLIGHT

HEAD-ON CONTRASTS (Cont.): Some further Interesting Scale Drawings of Machines Entered for the MacRobertson Race



ON this and the two previous pages will be found front elevations of thirty-two of the aeroplanes originally entered for the Australia Race. A number of the machines shown will not be starting on Saturday, but they have been included as a matter of interest. All the drawings are to a uniform scale, so

that the relative sizes of the machines can be seen at a glance. The front view was chosen because in racing it is the frontal area presented to the air which is important. It will be seen that quite a large percentage of the machines have retractile undercarriages. The abbreviations are: S=Speed Race; H=Handicap Race.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

F.A.I. and Ireland

At its meeting in New York last week the Federation Aeronautique Internationale decided to return the application of the Irish Aero Club for membership with a request for further information. It is understood that the Club's title is objected to as indicating its control over the whole of Ireland instead of the twenty-six counties of the Irish Free State. A similar objection was made when the Club applied for membership some years ago. The matter will be considered at the next Council meeting.

Twenty-five Years Ago

From "Flight" of October 16, 1909.

"The Helicopter Problem: That a machine which could rise into the air vertically from the spot on which it is standing would be a tremendous advantage for certain purposes, no one who has watched the difficulties of ascent with aeroplanes which run along the ground, can doubt. Desirable as this quality is, however, it is not at the moment a fundamental necessity, and from our own part we strongly favour the practice of flight with present-day successful machines, in the belief that a surer and quicker progress is most likely to result from the actual familiarity with the air which that practice will confer, than can be expected from the more or less theoretical study of a problem which is eminently beset with great difficulties."



AN EASTERN PILGRIMAGE—NEW STYLE: This party flew, in Mr. Graham Mackinnon's "Dragon," out to Baghdad, there to await the arrival of competitors in the England—Australia Air Race. They are, from left to right: (standing) F. Farey Jones, M. O. Gatrell, Graham Mackinnon and K. W. Bear. (Sitting) J. K. Morton, pilot, and Lt. Com. C. N. Colson, R.N., of "Flight's" Editorial Staff, who will keep our readers informed as to the progress of the Race at Baghdad. (Flight Photo.)

Indian Airmen's Adventure

Some of the members of the Bombay Flying Club who were flying back to India after their visit to England have experienced a little adventure en route.

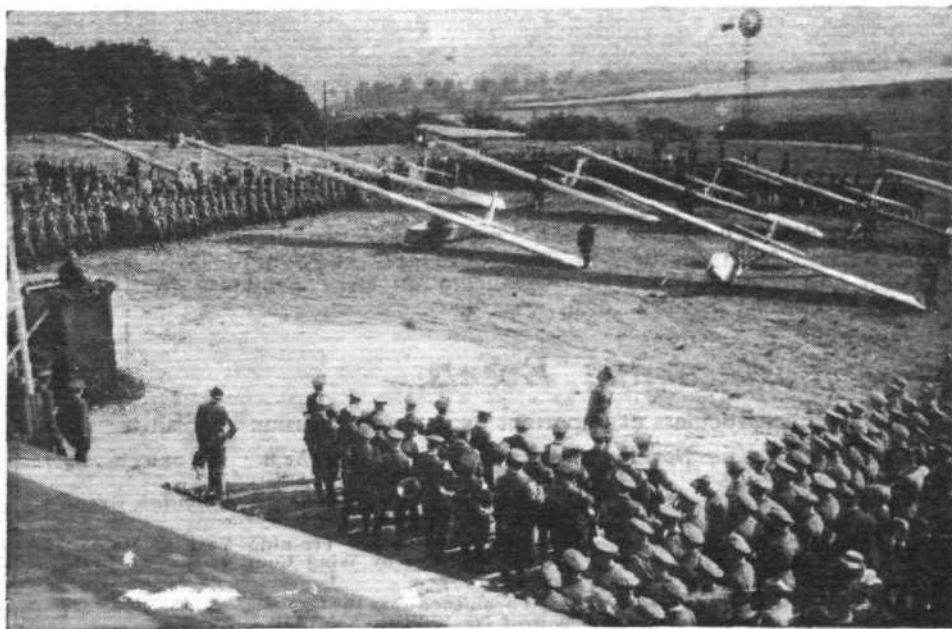
The four machines left Baghdad for Basra on October 8 under the leadership of Flt. Lt. Binley, who was accompanied by an Indian member. The last two reached Basra safely, but the other three machines carrying Mr. Philip Stone and three Indian members were forced down in the desert. At first some anxiety was felt for their safety, but after four days' search over the desert by R.A.F. machines the missing airmen were found safe and well on the Iraq-Nejd frontier, 200 miles from Basra.

The Zeppelin Atlantic Service

Dr. Eckener has sailed for the United States to obtain permission to operate a regular airship service across the North Atlantic with the L.Z.129, now nearing completion. If permission is granted the new Zeppelin will be filled with helium gas.

Airliner v. Meteor

Once again comes a report from America of a meteor and an aeroplane coming into unpleasantly close contact—we recorded such a case early this year. This time an airliner, piloted by Archie Anderson, with thirteen persons aboard, was flying over Solano, California, when showers of flaming meteorites hurtled past the machine, some bursting with sufficient force to "rock the machine." One described by the pilot "as big as a barn" burst directly in his path, and he had to swerve to avoid it.



GLIDING IN GERMANY: The opening ceremony of a new Glider Aerodrome at Alt-Tocplitz, near Potsdam.



THE GROUND ENGINEER: Croydon Aerodrome's pet cat inspects the Armstrong-Siddeley "Genet" on an Imperial Airways Westland "Wessex." No doubt it would have preferred a "Lynx" or one of the other cat tribes.

Lord Sempill Flying to Australia

Within the next few days Lord Sempill will be off on a flight, by easy stages, to Melbourne. He will follow, approximately, the Air Race route, and after reaching Melbourne he proposes flying round Australia, then proceeding north to Manchukuo and back by Singapore.

Frontal Areas

A feature of this issue which will make a strong appeal, especially to students of design, is a series of head-on views, drawn to scale for purposes of comparison, of MacRobertson Race machines. They will be found on pp. 1082-1084.

The Duce Flies

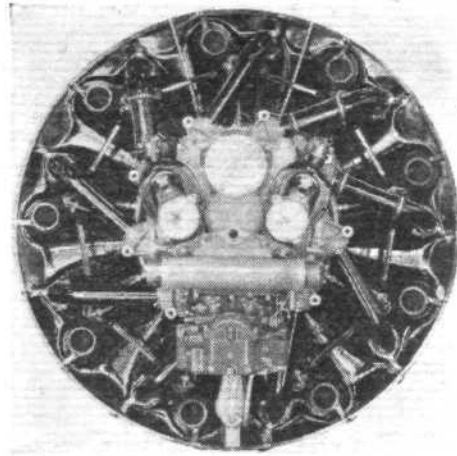
Returning to Rome from his tour of Northern Italy last week, Signor Mussolini piloted his own aeroplane.

Season!

Mr. Llewellyn C. Wood, a South Wales representative of a Bristol advertising firm, is, perhaps, the first person in this country to possess an aerial season ticket. He took out the season on the service operated between Bristol and Cardiff by Western (Norman Edgar) Airways, and travels daily to and from these two places.

A Portuguese Flying Meeting

A flying meeting—"Le Gala International d'Abreu"—is being arranged, and will probably take place at the Amadora Aerodrome, Portugal, on November 4, in memory of Capt. Placido d'Abreu, who was killed during the Aerobatic Contest at Vincennes last June. It is hoped thereby to raise a sum of money for Capt. d'Abreu's widow. The gala is being sponsored by "Le Petit Parisien," the French "Air Propagande," and the Portuguese newspaper, "Diario de Noticias," with the assistance of the Portuguese Minister of War (who controls Portuguese Military Aviation), and the Aero Club de Portugal. It is expected that a French squadron will fly to Lisbon to take part in the display (and incidentally to do a little quiet propaganda), while it is probable that about twenty foreign flying "aces" will also lend their aid, and such names as Detroyat, Cavalli, Fieseler, Novak and Christopher Clark-son have been mentioned in reports of the proceedings of the organising commission. A German lady parachutist will also take part.



"SIHI-G": This is not a micro-photo of some terrible germ, but the end view of the Pratt and Whitney 9-cylinder, air-cooled radial aero engine, series SIHI-G.

Belgian Stratosphere Ascent

The Belgian Aero Club has homologated the stratosphere balloon ascent of M. Max Cosyns and M. Van der Elst, made on August 18, at 16,114 m. (10 miles 70 feet).

A Sign of the Times

A sign of the times as far as Irish politics are concerned is contained in the following announcement published in Dublin last week:—"The Everson Flying Services at Kildonan aerodrome are entirely non-political, and are solely for the furtherance of aviation in Ireland. Persons visiting the aerodrome are asked to refrain from wearing political uniform or insignia of any description." The last sentence obviously refers to the newly formed "Blueshirt" Aero Group.



FOR A PORTUGUESE VENTURE: The De Havilland "Leopard Moth" on which Lt. Humberto da Cruz of the Portuguese Air Force intends to carry out a flight from Portugal to Timor, the farthest Portuguese possession. The machine was purchased by a national subscription, and Lt. Humberto da Cruz proposes to fly back from Timor via Hong Kong.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

- Oct. 18. "The Education of Aeronautical Engineers." R.Ae.S. Lecture by Prof. A. J. S. Pippard.
- Oct. 20. England-Australia Race for MacRobertson Prize. Start at Mildenhall.
- Oct. 20. R.A.F. v. Cambridge University Football Match at Cambridge.
- Oct. 25. "The Compressed Air Tunnel." R.Ae.S. Lecture by Mr. E. F. Relf, R.Ae.S.
- Oct. 27. R.A.F. v. Corinthians Football Match at Ipswich.
- Nov. 8. "Speeds of Commercial Aircraft." R.Ae.S. Lecture by M. Louis Bréguet.

- Nov. 15. "Flying Boats." R.Ae.S. Lecture by Mr. I. I. Sikorsky.
- Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Élysées, Paris.
- Nov. 21. "The Royal Air Force Training Year At Home." R.U.S.I. Lecture by Wing Com. L. L. MacLean, R.A.F.
- Nov. 22. "Air Turbulence near the Ground." R.Ae.S. Lecture by Prof. Dr. Wilhelm Schmidt.
- Nov. 29. "Engine Research." R.Ae.S. Lecture by Capt. A. G. Forsyth.

ORGANISATION

Behind the Scenes in the MacRobertson Race : A Difficult Task Accomplished by Good Will and Co-operation

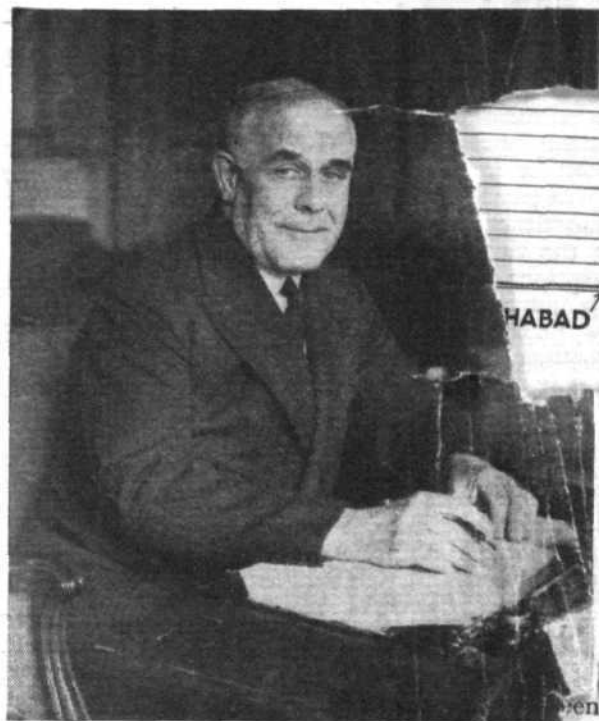
SOME of the difficulties of organising a great air race which stretches half-way around the world were dealt with in an article by Mr. E. J. Hart in *Flight* of August 30. Mr. Hart was concerned mainly with the Australian end of the route, the Melbourne Air Race Committee having undertaken the organisation between Melbourne and Koepang. In view of the amount of work involved in organising the section of the air race route between England and Koepang, it is of interest to know how this was undertaken, and to that end we have interviewed Lt. Com. H. E. Perrin, Secretary of the Royal Aero Club of the United Kingdom.

Com. Perrin was unwilling to discuss his own share in the difficult task, although his friends say his hair has greyed considerably since the organisation of the air race began. Concerning the work of others, Com. Perrin is, however, very enthusiastic.

The organisation began last November. The Royal Aero Club formed a sub-committee, presided over by Mr. W. Lindsay Everard, M.P., who is president of the Leicestershire Aero Club and a member of the committee of the Royal Aero Club. Innumerable meetings of the air race sub-committee have been held, and during the last three months the committee has met as often as twice a week to discuss and settle problems which arose.

As explained elsewhere in this issue, there are two races to Melbourne—a speed race and a handicap race. The routes for the two races are different, which fact more than doubled the work of organisation. Taking the speed race first, it was necessary to arrange with the different Governments *en route* for permission to fly over their countries, and arrangements had to be made for an organisation at each of the controls. Fortunately, it was found possible in most cases to make the necessary arrangements with the assistance and co-operation of the directors of civil aviation in the various localities. For instance, at Baghdad the organisation of the control has been in the hands of the Director of Civil Aviation. The arrangements at the Allahabad control and at all the checking points in India are in the hands of the Aero Club of India and Burma under the direction of Capt. Tymms, the Director of Civil Aviation in India.

At Singapore the control arrangements have been most ably looked after by the Royal Singapore Aero Club in close co-operation with Grp. Capt. Sydney W. Smith, O.B.E., Officer Commanding the R.A.F. Far East Command. Farther afield, in the Dutch possessions, arrangements have been made to have the organisation in the



Lt. Com. H. E. Perrin, Secretary of the Royal Aero Club. (*Flight* Photo.)

able hands of the Director of Civil Aviation in the Dutch East Indies, and from Koepang onwards the organisation passes into Australian hands.

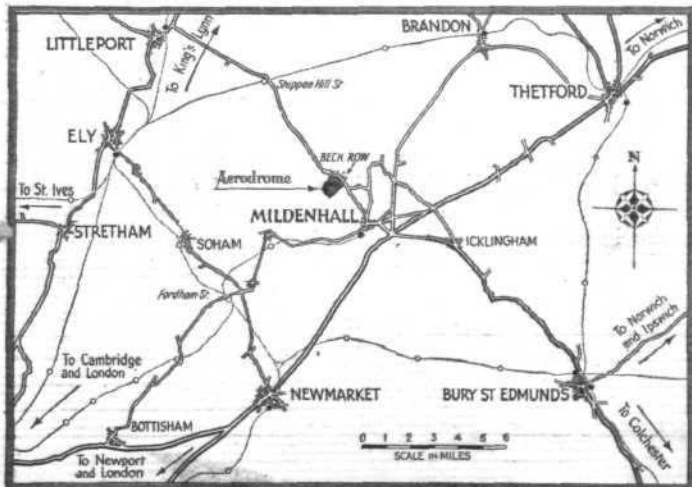
Arrangements have been made at the various checking points with local aero clubs and other bodies to look after the organisation, and in most cases local committees have been formed to deal with the problems arising. At London where, Com. Perrin states, the Royal Aero Club has met with courtesy and willingness to help.

When the entries list closed last June about 50 machines had been entered for the two races, and the problem of finding an aerodrome with sufficient accommodation to house so many aeroplanes threatened to be a serious one. Every possible aerodrome within a reasonable distance of London was examined, but none was found entirely suitable. Then the Air Council came to the rescue with an offer to lend Beck Row Aerodrome, near Mildenhall. This was unfinished, but already had enough hangar accommodation, and the surface was excellent as well as being of large area. No charge is being made for the loan of this aerodrome, but a comprehensive insurance has had to be arranged, in case any competing aircraft should do serious damage to property in the vicinity.

Communications will play an important part, not only in keeping the world informed of the progress of the race but also in the smooth working of the organisation, and the Royal Aero Club has arranged for messages concerning the arrival of competitors to be sent forward to the next control or checking point and back to London. At Mildenhall aerodrome itself the G.P.O. has installed an excellent service of teleprinters and telephones, so that news can be distributed with a minimum loss of time.

Although Mildenhall aerodrome possesses excellent fuel storage this could not be made available to competitors, and arrangements have had to be made for special facilities to be provided.

During the last week sixty officials of the Royal Aero Club have given up their time to lend a hand in the capacity of stewards, marshals, etc. Their work has not been easy, but, on the whole, they have shown a great deal of tact in dealing with the problems which inevitably arose. Had all the competitors originally entered the race, the difficulties might have been more serious. As it is, there is reason to expect smooth working right up to the time of sending off the last man.



THIS WEEK'S AERONAUTICAL CENTRE: Twenty aeroplanes will start from Mildenhall, from 6.30 on Saturday. The public will be admitted free, and 2s. per car will be charged.

ENGLAND-AUSTRALIA

6.30 a.m. on Saturday next the first Competitor in the Race from

England to Australia for
the "MacRobertson"
Prize and Trophy will
be flagged off from Mil-
denhall Aerodrome,
Suffolk



DONOR AND TROPHIES: Sir MacPherson Robertson, whose generosity in presenting prizes and trophies has brought about the greatest race ever organised.



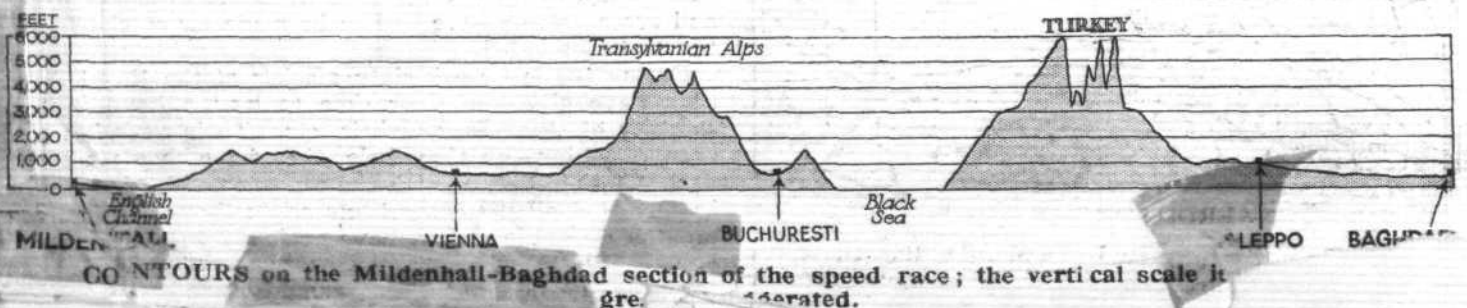
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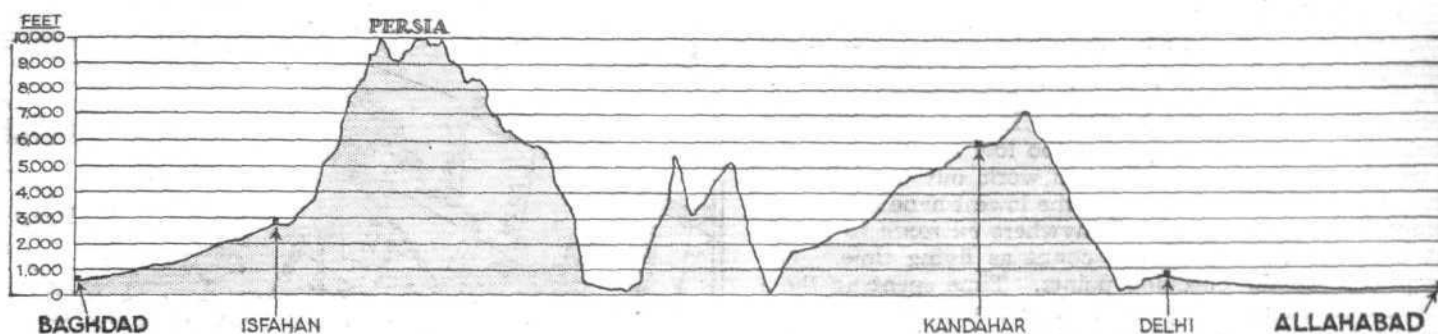
ALTHOUGH the main points in the regulations which govern the air race from England to Australia have been dealt with from time to time in *Flight*, it may be of assistance to our readers if we give a brief summary of them here, as well as an outline of the general situation. In connection with the Centenary Celebrations of the State of Victoria and the City of Melbourne, the famous Australian chocolate manufacturer, Sir MacPherson Robertson, a leading citizen of Melbourne, decided to donate a sum of £15,000 and a gold cup, to be given to the winner of an air race from England to Melbourne. To this end it was agreed to give the title The "MacRobertson" International Air Races, and after much discussion the race was planned for two races, a speed race and a handicap race, to be flown concurrently. For the speed race Sir MacPherson Robertson's donations are divided as follows: First Prize £10,000 and a gold cup valued at £500; Second Prize £1,500; Third Prize £500. In the handicap race the First Prize is of £2,000 and the Second Prize £1,000.

For the speed race there are five compulsory landing places, known as *Controls*, and for the handicap race these five controls are also in force, with the addition of a number of optional landing places, known as *Checking Points*. The controls are: Baghdad, Allahabad, Singapore, Darwin, and Charleville. The checking points in the handicap race are: Marseilles, Rome, Athens, Aleppo, Bushire, Jask, Karachi, Jodhpur, Calcutta, Rangoon, Bangkok, Alor Star, Batavia, Rambang, Koepang, Newcastle Waters, Cloncurry, and Narromine. The finishing point is Flemington Racecourse, Melbourne, but competing machines will not be able to land there. After crossing the finishing line they will proceed to Point Cook Aerodrome across Port Phillip Bay from Melbourne.

Apart from the question of handicap allowances, there is one very important difference between the speed race and the handicap race regulations. In the latter it is only actual flying time which is taken into account. In the speed race, however, the time spent at controls is counted as flying time. Thus, in the handicap race a competitor may arrive at a control or a checking point shortly before dark, and may decide to spend the night there. In the speed race there will be no such waits. Competitors will land, refuel and pass the necessary examinations as rapidly as possible, and will then be off again. They will fly by night as well as by day, and they will be in a great hurry at the controls, as every minute spent on the ground will count as flying time.

It will readily be understood that refuelling will play a very important part. The competitor who gets to the petrol pump first will have precedence in cases where two competitors are refuelling from the same source, and while his tanks are being filled, the official observers at the control will be examining his machine to see that he has made no changes in the load carried, that he carries the stipulated emergency rations, life belts and distress signals. The only item likely to cause any delay is the quantity of fuel carried. All aeroplanes which take part in the races must be built to a standard approved by the proper authorities in their own country, and must also conform to what is known as the I.C.A.N. take-off requirements. (The letters, by the way, indicate International Commission for Air Navigation.) This stipulates that a machine must, when taking off from standing start, clear an obstacle 20 metres (65.5ft.) high in a horizontal distance of 600 metres (656 yards). This clause has been inserted in the regulations in the interests of safety. Its object is to ensure that no overloaded aeroplane takes part in the race. An aeroplane





DIFFICULT COUNTRY in the second stage of the speed race.

which can clear the obstacle in that distance is considered to have a sufficient rate of climb, which is another way of saying a sufficient power reserve, to be fit for flying across many countries and in wide variations of climate. The possible source of trouble at controls, to which reference has been made, may arise in cases where the maximum loaded weight with which a given aeroplane will clear the obstacle in the take-off test is such that to stay below this weight the tanks cannot be filled quite full. In order to comply with the regulations, such a machine would start from Mildenhall with less than full tanks. When it arrived at Baghdad, or some other control, the pilot would want to fill his tanks completely in order to be sure of having enough petrol to get him to the next control. But if he were to fill his tanks quite full the aeroplane would be over the weight permitted by the take-off regulations, and would not therefore comply with the regulations of the race.

In the official regulations published by the Royal Aero Club, it is laid down that in such cases the onus is on the competitor himself. His duty, as well as his interest, is to provide approved reliable means for checking quickly the contents of his tanks at the controls. Whatever these means are, they will be stamped or sealed before the start in order to let officials at the controls *en route* know that they have not been tampered with. If the means adopted

are such that it takes the officials a long time to use them for ascertaining the contents of his tanks, he will lose that much unnecessary time at the controls.

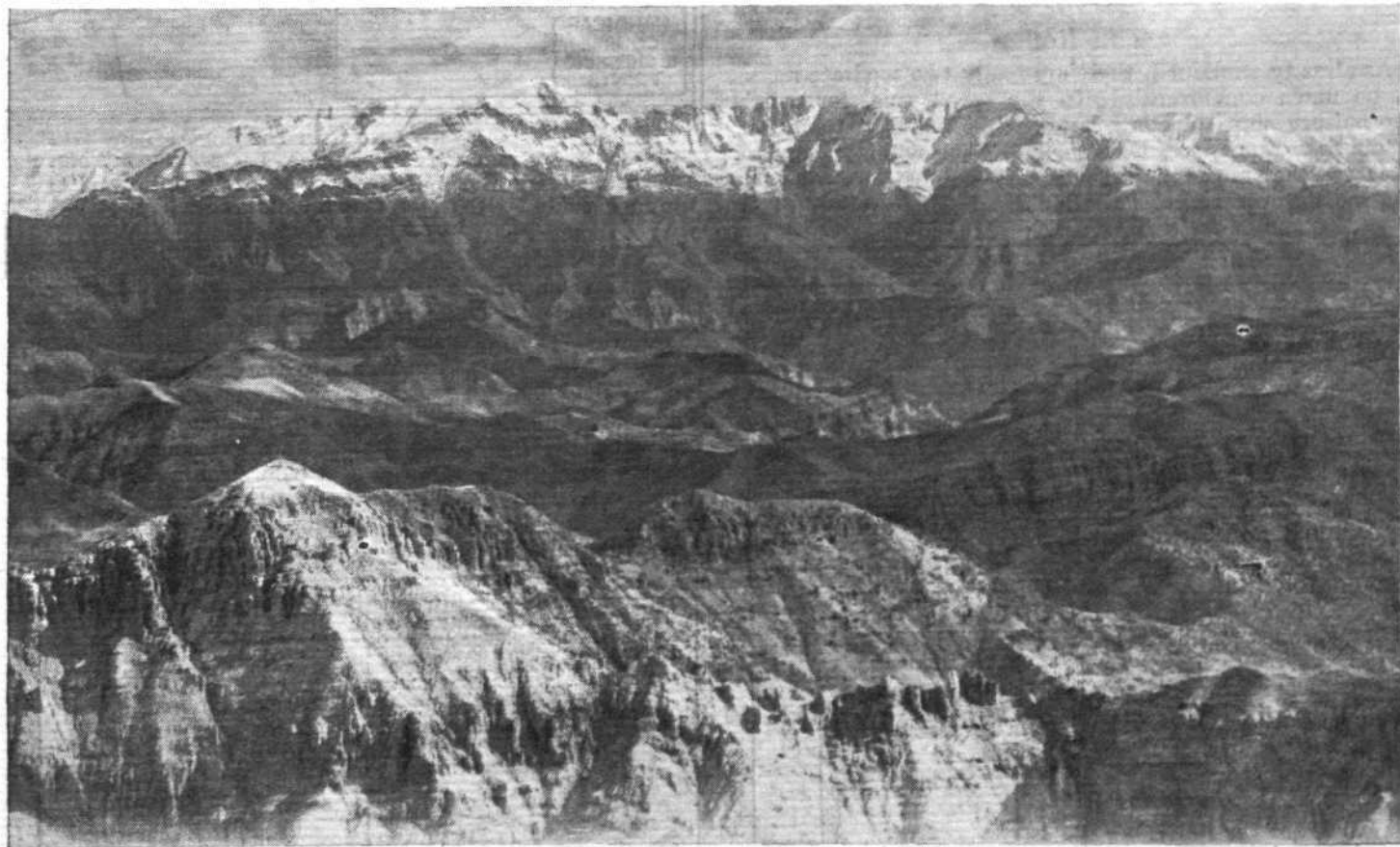
The Great Circle distances between the controls are as follows: Mildenhall-Baghdad 2,530 miles; Baghdad-Allahabad 2,300 miles; Allahabad-Singapore 2,210 miles; Singapore-Darwin 2,084 miles; Darwin-Charleville 1,389 miles; and Charleville-Melbourne 787 miles.

In the speed race the machines will carry no pay load. That is to say, no points or similar awards are made for pay load, so that the fast machines will carry only their crews and sufficient petrol to cover the stages between controls.

A different system has been adopted for the handicap race. In this, the speed at which the competing aeroplanes are handicapped is decided by a formula which takes into account: The gross weight of the machine (while conforming to I.C.A.N. requirements), the pay load, the wing area, and the horse-power of the engine(s). The formula is as follows:—

$$V = 140 \left(1 - \frac{0.2L}{W-L} \right) \left(\frac{P}{A} \right)^{\frac{1}{4}}$$

Where V is the handicap speed in m.p.h., L the pay load in lb., W the gross weight of the aeroplane in lb., A the



NOT INVITING: Mountains and hills like these, in Persia, will have to be crossed by competitors in the speed race, mostly at night.

wing area in sq. ft., and P the rated normal power of the engine(s) in b.h.p.

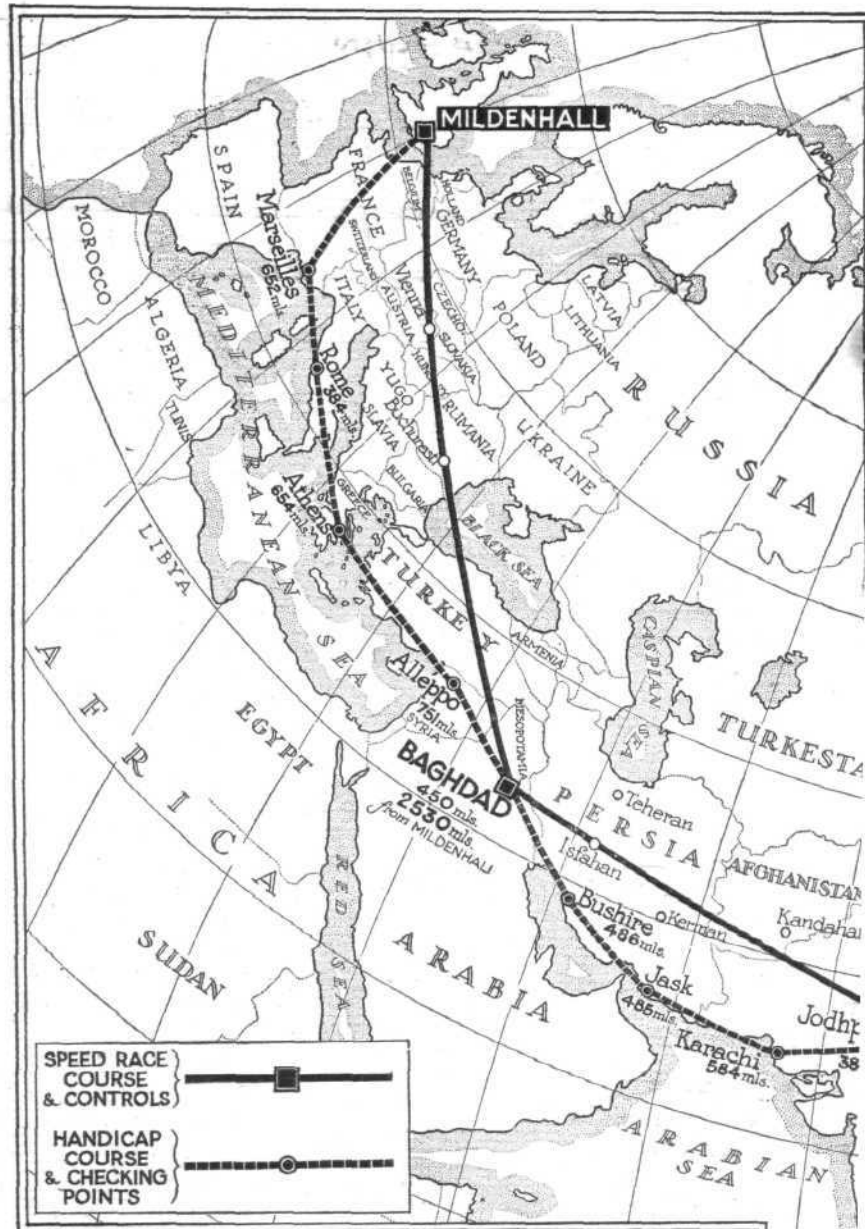
It is not possible to go into details concerning the soundness or otherwise of the formula. It may give too high handicap speeds or it may give too low handicap speeds. It will be for each competitor to work out carefully the ratio of pay load which will give the lowest handicap speed. Competitors are free to land anywhere *en route* to refuel, but the time thus spent will count as flying time. The exceptions are the checking points. Time spent at them does not count as flying time. The tendency will, therefore, be to fly from one checking point to the next without refuelling. The longest stage between checking points will be that from Athens to Aleppo, which is 751 miles. There are several stages of 650 miles or more. Crew and passengers count as pay load, an allowance of 200 lb. being made for each person carried. Petrol and oil do not count as pay load.

At Mildenhall

Competitors were not admitted to Mildenhall Aerodrome until last Saturday, and were given until 4.30 p.m. on Sunday last to "report with their aircraft completely erected and bearing the necessary certificates of airworthiness." During the week the formalities of checking machines for pay load, gross weight, etc., were gone through, and at 6.30 a.m. on Saturday next, October 20, the first machine will be sent off. In the interests of safety it has been decided to send the machines off at short intervals, so that there may be no risk of collision. In the case of the speed race, this would impose unfairness on late starters, and in order to remedy this the necessary time allowance will be corrected on the arrival of competitors at Singapore. For example, if the last machine in the speed race is started from Mildenhall 30 minutes after the first one, it will not, upon reaching Singapore, be held up at all, but the first machine to leave Mildenhall will be held up for 30 minutes at Singapore. During that period no work on the machine will be permitted. That is to say, as far as working on it is concerned, the machine will be treated as if it were flying.

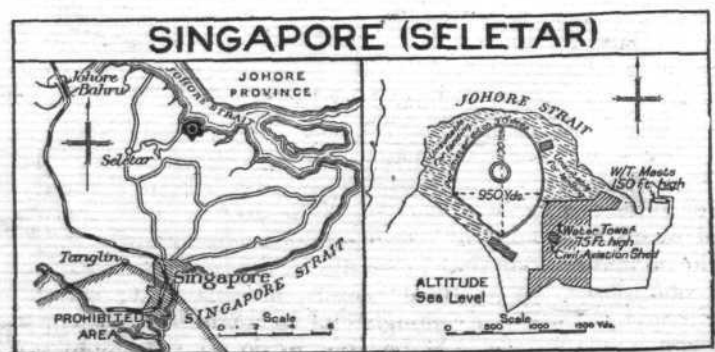
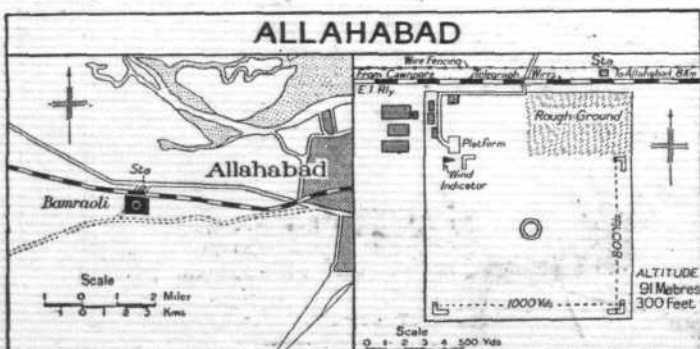
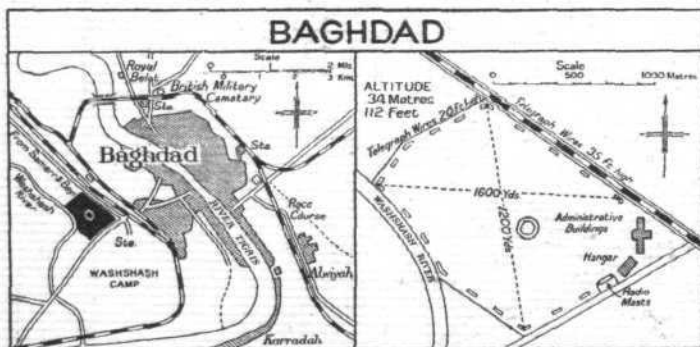
The Route

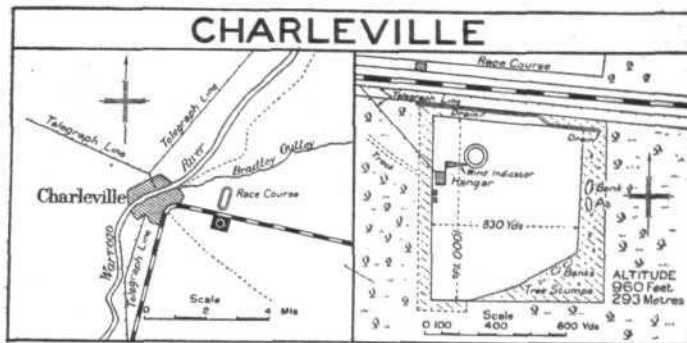
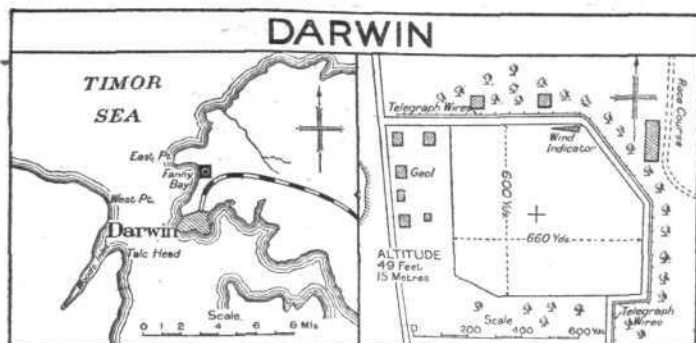
As already explained, there are really two separate races, to be flown concurrently. In the speed race, for which compulsory stops or controls are to be made at Baghdad, Allahabad, Singapore, Darwin, and Charleville, it may be expected that in the majority of cases competitors will take the most direct route, i.e., the Great Circle route. This



will take them from Mildenhall over the Thames Estuary, southern Holland, Germany, Austria (near Vienna), across the south-western corner of the Black Sea, over the mountains of Asia Minor, and down to the low-lying country around Baghdad.

Persian mountains will form an obstacle at the very beginning of the second stage, and extremely difficult country will have to be flown over before competitors reach Allahabad. The direct route lies nearly over Isfahan, and the mountains rise to 10,000 ft. or more. After crossing into Baluchistan conditions are little better, and not until

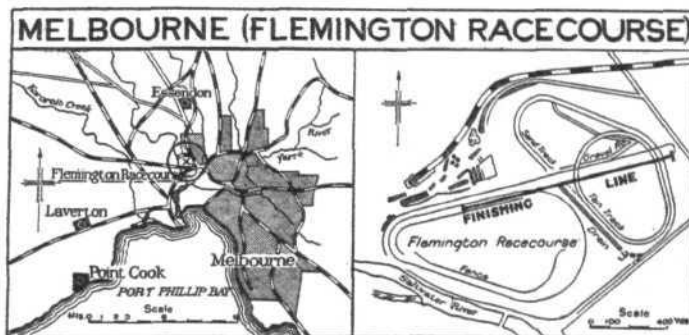




the plains of the Indus are reached will it be possible to fly at much less than 10,000 ft.

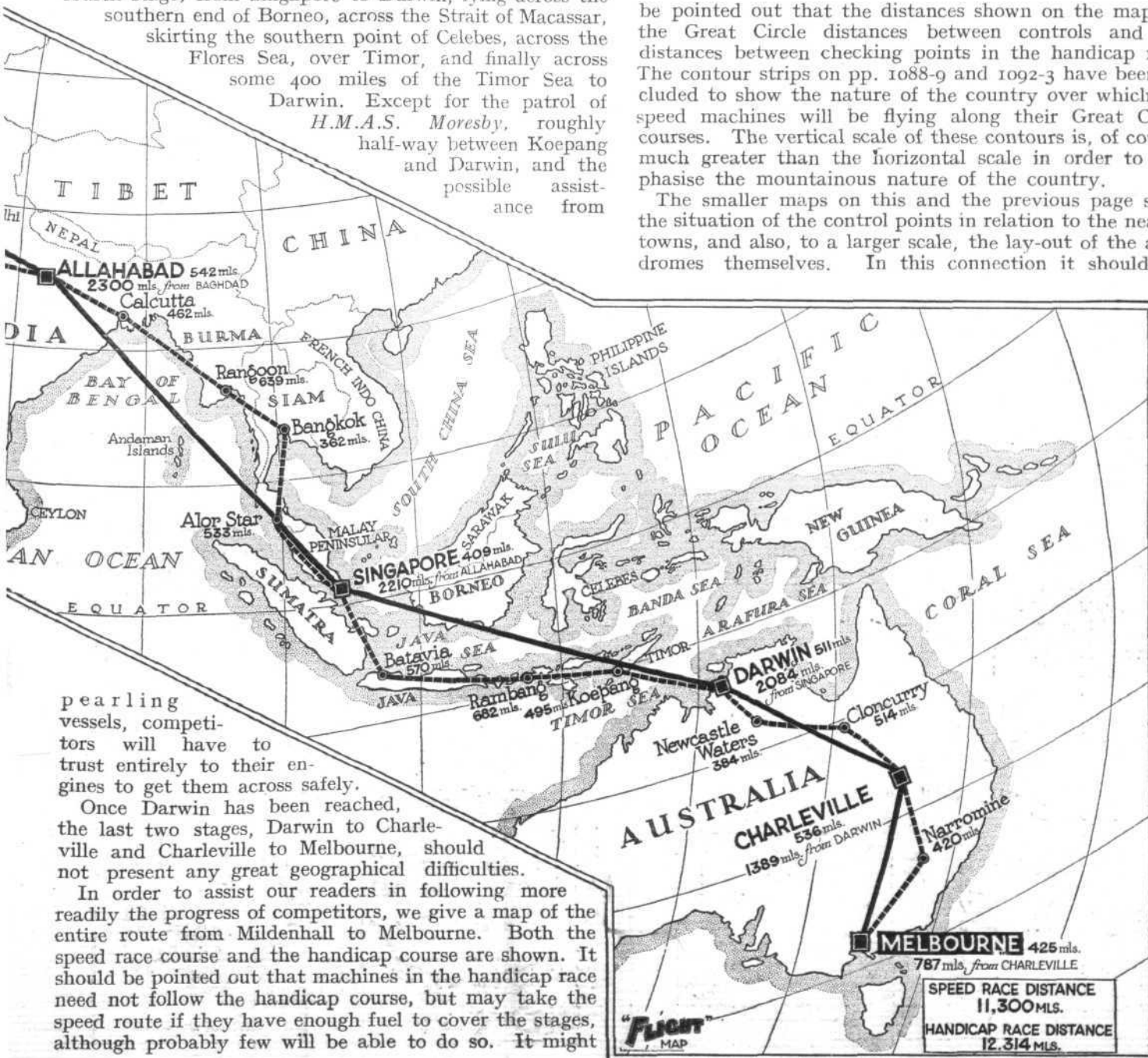
On the third stage, from Allahabad to Singapore, competitors will be little worried by mountains, but they will have to cross large stretches of sea. Leaving the coast a couple of hundred miles south-west of Calcutta, they will head out over the Bay of Bengal, and some hundreds of miles of sea will have to be covered before the coast of the Federated Malay States is struck in the neighbourhood of Puket Island, well to the north of the entrance to the Malacca Strait.

Next will come a number of long sea crossings, the fourth stage, from Singapore to Darwin, lying across the southern end of Borneo, across the Strait of Macassar, skirting the southern point of Celebes, across the Flores Sea, over Timor, and finally across some 400 miles of the Timor Sea to Darwin. Except for the patrol of H.M.A.S. Moresby, roughly half-way between Koepang and Darwin, and the possible assistance from



be pointed out that the distances shown on the map are the Great Circle distances between controls and the distances between checking points in the handicap race. The contour strips on pp. 1088-9 and 1092-3 have been included to show the nature of the country over which the speed machines will be flying along their Great Circle courses. The vertical scale of these contours is, of course, much greater than the horizontal scale in order to emphasise the mountainous nature of the country.

The smaller maps on this and the previous page show the situation of the control points in relation to the nearest towns, and also, to a larger scale, the lay-out of the aerodromes themselves. In this connection it should be



pearling vessels, competitors will have to trust entirely to their engines to get them across safely.

Once Darwin has been reached, the last two stages, Darwin to Charleville and Charleville to Melbourne, should not present any great geographical difficulties.

In order to assist our readers in following more readily the progress of competitors, we give a map of the entire route from Mildenhall to Melbourne. Both the speed race course and the handicap course are shown. It should be pointed out that machines in the handicap race need not follow the handicap course, but may take the speed route if they have enough fuel to cover the stages, although probably few will be able to do so. It might

SPEED RACE DISTANCE
11,300 MILES.
HANDICAP RACE DISTANCE
12,314 MILES.



ANTIQUITY: Erbil, near the Great Zab River and some 60 miles E.S.E. of Mosul, is reputed to be the oldest inhabited city in the world.

pointed out that at the finish, the aeroplanes will not alight on Flemington Racecourse, Melbourne, but will proceed to other aerodromes in the district, mostly to Point Cook.

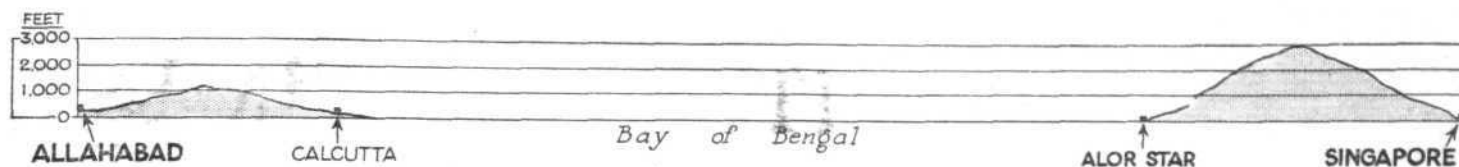
Although it is obviously impossible to state with any degree of accuracy how long the England-Australia speed race will take, it is possible to make a rough estimate. The total distance from Mildenhall to Melbourne along the Great Circle courses is about 11,300 miles. If, therefore, an aeroplane is capable of averaging 200 m.p.h., it will cover that distance in 56½ flying hours. Time must, however, be allowed for stops at the five controls. It may, perhaps, be assumed that these stops will average one hour each, in which case the whole course would be completed in a total of 61½ hours. The table below shows flying times at speeds between 140 and 240 m.p.h.

For the purpose of estimating the flying time between the different controls, we give also tables of flying times and speeds between the controls, from which the flying time of any machine the speed of which is known can easily be estimated.

It may be instructive to attempt to follow a competitor doing 200 m.p.h. from start to finish, and to examine the times at which he may be expected at the various controls. Assuming the start to be made from Mildenhall at 6.30 a.m. G.M.T., the aeroplane would reach Baghdad, 2,530 miles away, in 12 hours 40 minutes, approximately. This would be 7.10 p.m. G.M.T. As Baghdad is 3 hours ahead of Greenwich Mean Time, it would be 10.10 p.m. local time when the machine landed. Allowing one hour for refuelling, inspection, etc., a start would be made again at 8.10 p.m. G.M.T. (11.10 p.m. local time) and in the

FLYING TIMES AT VARIOUS SPEEDS IN ENGLAND-AUSTRALIA RACE

Mildenhall to Baghdad (2,530 miles).			Allahabad to Singapore (2,210 miles).			Darwin to Charleville (1,389 miles).			Mildenhall to Melbourne (11,300 miles).		
Average Speed. m.p.h.	Actual Flying Time. Hours.		Average Speed. m.p.h.	Actual Flying Time. Hours.		Average Speed. m.p.h.	Actual Flying Time. Hours.		Average Speed. m.p.h.	Actual Flying Time. Hours.	
140 ..	18.06		140 ..	15.73		140 ..	9.92		140 ..	80.7	
150 ..	16.86		150 ..	14.73		150 ..	9.26		150 ..	75.3	
160 ..	15.81		160 ..	13.81		160 ..	8.68		160 ..	70.6	
170 ..	14.88		170 ..	13.00		170 ..	8.17		170 ..	66.5	
180 ..	14.05		180 ..	12.26		180 ..	7.72		180 ..	62.8	
190 ..	13.31		190 ..	11.63		190 ..	7.32		190 ..	59.5	
200 ..	12.64		200 ..	11.05		200 ..	6.94		200 ..	56.5	
210 ..	12.04		210 ..	10.51		210 ..	6.62		210 ..	53.8	
220 ..	11.50		220 ..	10.04		220 ..	6.32		220 ..	51.3	
230 ..	11.00		230 ..	9.61		230 ..	6.04		230 ..	49.2	
240 ..	10.53		240 ..	9.21		240 ..	5.79		240 ..	47.1	
Baghdad to Allahabad (2,300 miles).			Singapore to Darwin (2,084 miles).			Charleville to Melbourne (787 miles).					
Average Speed. m.p.h.	Actual Flying Time. Hours.		Average Speed. m.p.h.	Actual Flying Time. Hours.		Average Speed. m.p.h.	Actual Flying Time. Hours.				
140 ..	16.43		140 ..	14.90		140 ..	5.62		To these flying times must be added the time spent at the controls, of which there are five. Time thus spent counts as flying time, the winner of the speed race being the competitor who covers the distance in the shortest lapsed time.		
150 ..	15.33		150 ..	13.90		150 ..	5.24				
160 ..	14.38		160 ..	13.03		160 ..	4.92				
170 ..	13.53		170 ..	12.26		170 ..	4.63				
180 ..	12.77		180 ..	11.58		180 ..	4.37				
190 ..	12.10		190 ..	10.97		190 ..	4.14				
200 ..	11.50		200 ..	10.42		200 ..	3.94				
210 ..	10.95		210 ..	9.93		210 ..	3.75				
220 ..	10.45		220 ..	9.48		220 ..	3.58				
230 ..	10.00		230 ..	9.07		230 ..	3.42				
240 ..	9.58		240 ..	8.69		240 ..	3.28				



SEA is the chief feature of stage 3 in the speed race.

dark of night the aeroplane would be heading towards the Persian mountains.

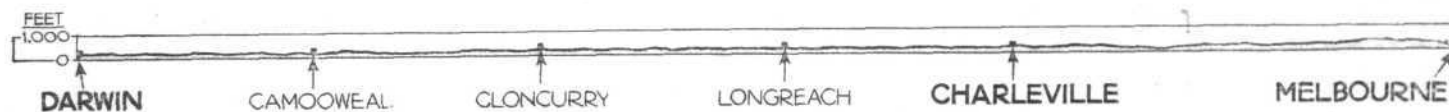
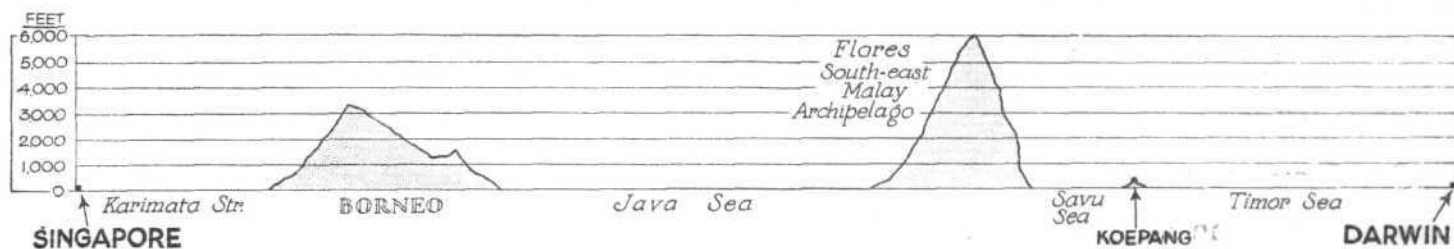
Still assuming an air speed of 200 m.p.h., Allahabad would be reached in $11\frac{1}{2}$ hours, the distance being 2,300 miles. The landing would occur at 7.40 a.m. G.M.T. on the morning of Sunday, October 21. Allahabad is $5\frac{1}{2}$ hours ahead of London in point of time, so that it would be 1.10 p.m. local time when the machine landed. After another hour spent in refuelling, etc., the machine would be off from Allahabad at 8.40 a.m. G.M.T. (2.10 p.m. local time), with Singapore as the next stop, 2,210 miles away. At 200 m.p.h. this distance would take about 11 hours, Singapore being reached at 7.40 p.m. G.M.T. The difference in time between Singapore and London being 7 hours, it would by then be 2.40 a.m. local time on the morning of Monday, October 22.

After the usual hour's wait, which we have assumed to be the average spent at controls, the aeroplane would be off again at 8.40 p.m. G.M.T. (3.40 a.m. local time). The 2,084 miles to Darwin would occupy 10 hours 25 minutes, which would mean that this stage would be covered in daylight, the arrival in Darwin taking place

at 7.05 a.m. G.M.T. (4.35 p.m. local time, Darwin being $9\frac{1}{2}$ hours ahead of London). As the High Commissioner for Australia facetiously remarked at the Royal Aero Club banquet to the competitors, the race is "only really beginning" when Darwin is reached!

Having arrived at Darwin, the most difficult part of the race should be over, and at 8.05 a.m. G.M.T. (5.35 p.m. local time), our machine would be off again, heading towards Charleville, 1,389 miles away. At 200 m.p.h. this stretch would take about 7 hours, so that our machine would land at Charleville at 3.0 p.m. G.M.T. or 1 a.m. local time (on October 23). After the customary hour's stop, it would be off again at 4 p.m. G.M.T. (2 a.m. local time), and the finishing line on Flemington Racecourse, Melbourne, 787 miles away, would be crossed at 8.0 p.m. G.M.T. on Monday, October 22. Melbourne being 10 hours ahead of London, it would be 6.0 a.m. local time, on Tuesday, October 23.

The foregoing can obviously be a very rough guess only, but it should serve to show the approximate times of arrival at the various controls, and the approximate time of the finish.



THE TWO FINAL STAGES of the speed race; the Australian contour is not a startling one.

AERODYNAMICS AT OLYMPIA

The Coachwork Designers Become "Air Minded"

WHETHER the all-pervading vogue of the "Airline" or "Airflow" coachwork is merely a passing fashion or whether it will persist and develop in the future remains to be seen, but at the Olympia Motor Show this year streamlining is the predominant motif.

Flying has, after all, gripped the popular imagination quite thoroughly during the past year or two, but it is just possible that the car designer may discover that he is chasing a shadow. Air resistance does not matter so very much at speeds below a mile-a-minute, and proper streamlining on present-day chassis is only possible at the expense of comfort and body space. But the vogue may persist, and, if it does, chassis design is likely to be fundamentally altered to suit the new conception.

This year the majority of makers have travelled just so far along the road—perhaps by way of testing the trend. Wings may be beautifully shaped, coachwork smoothly rounded off and tails brought back to complete the aerodynamic shape, but bonnets and forward fittings so often remain unchanged. There is a world of resistance, both direct and parasitic, in the inevitable arrangement of the front of a car, and the vast majority of designs give one the impression that they would travel backwards much more satisfactorily than forwards. Wind tunnel tests have, as a matter of fact, sometimes proved this to be so.

Curiously enough, the more perfect aerodynamic designs are, to unaccustomed eyes, inclined to appear "brutal," but the man in the street is no longer shocked by the sight of the cars which have pioneered the movement. Certainly we shall see no more sharp corners in bodywork. "Eddyfree" is the car manufacturer's motto.

H. A. T.

"THE TRAINING OF AERONAUTICAL ENGINEERS"

Lecture at the R.Ae.S.

TO-DAY, Professor A. J. Sutton Pippard, D.Sc., F.R.Ae.S., Professor of Civil Engineering at the City and Guilds Engineering College, will lecture before the Royal Aeronautical Society on "The Training of Aeronautical Engineers." This lecture is the opening one of the session and is one which it is hoped that aircraft manufacturers and educational authorities and others will attend and express their views. The Council of the Society are anxious to obtain such opinions in view of the importance of laying down sound foundations for aeronautical education for the future. The views put forward by Professor Pippard are controversial. The lecture will be held in the Lecture Hall of the Royal Society of Arts, 18, John Street, W.C.2, at 6.30 p.m. Non-members may attend on signing the visitors' book.

PRIVATE FLYING

A SECTION FOR OWNER-PILOTS
AND CLUB MEMBERS

IN my last contribution to these pages I dealt with my Australian flight preparations in so far as choice of route, maps and permits were concerned. One important aspect was not, however, touched upon, and that is the question of insurance. In the ordinary way I carry an insurance policy covering day and night flying in Great Britain and the countries of Europe except Russia and the Balkan States. This involves a premium of about one-ninth the value of my machine—not an excessive amount as aviation insurance figures go.

The Insurance Question

IF one compares this with the cost of insurance of a car of the same value, the ratio undoubtedly seems high, but I am assured by the underwriters that in assessing my premium every allowance has been made for the considerable amount of flying experience I have accumulated during the last twenty-one years. The inference is that a reasonably competent pilot with but a few hundred hours to his credit would pay more.

There is no doubt that the subject of aircraft insurance is in a very fluid state, and will remain a source of anxiety to the owner-pilot until greater competition amongst underwriters for this class of business results in a more reasonable scale of charges being reached. As it is, the private aircraft owner may well hesitate to make the outlay required for a full comprehensive cover, and many content themselves with taking out a third-party insurance only.

The question of a comprehensive policy for a long flight such as one to Australia and back presents many problems. One's broker sounds the market and reinforces his campaign among the limited range of underwriters with every argument he can muster in favour of a premium which his client can afford to pay. A great deal depends on the persistence and imagination of the broker, for the underwriter is on strong ground when he is dealing with flights in the less frequented parts of the world. He argues that the actual risk of accident may or may not be greater than in or within easy distance of the country of origin, but if such does occur, say, in Siam or the Dutch East Indies, the cost of salving the machine and transporting it to a competent repair works—which, in practice, generally means sending it home to the makers—is often prohibitive.

There is a good deal of sense in this, and the lack of foreign service depots where the chief types of aircraft could be satisfactorily repaired will undoubtedly influence insurance rates for some time to come.

As private flying along the Empire routes becomes more common, however, the demand for these services will appeal to the enterprise of such organisations as the De Havilland Company, who already have their branches in Australia and Canada, South Africa and India.

In the present circumstances, therefore, insurance for a long flight, such as the one under review, is bound to prove a very considerable item. In approaching my broker in the first instance, he quoted from his experience of

enquiries on behalf of certain owners of light aircraft who had entered for the MacRobertson Race. The rates in these cases, he told me, ranged between £70 and £200 per machine, and this for the single journey. After a good deal of negotiation my broker succeeded in obtaining a more satisfactory rate, but in spite of this I find that my outlay for insurance for the current year will amount to no less than twenty-five per cent. of the total value of the machine.

This state of affairs cannot be said to encourage the Empire flying tourist, or the owner-pilot who wishes to use his aeroplane for business journeys to the Dominions or to the Far East.

Fuel for Long-distance Flying

THE provision of fuel and oil for a long flight does not now present so much difficulty as it did in the past, but it still requires a certain amount of preparation if disappointment and inconvenience are to be avoided. On the Australian route several companies are in a position to provide both fuel and oil of their own manufacture at all the chief aerodromes.

I have referred before in these notes to the value of the "Petrol Carnet," and it is of particular advantage on such a journey as this. Although the petrol consumption by aircraft is a very small proportion of the total amount of motor spirit used, the zeal with which the aviation departments of our great oil companies are run shows that those who control the policy of these organisations are fully alive to the potentialities of aviation in the future. It is indeed a pleasure to co-operate with those who look after the flying requirements, for nothing seems too much trouble if it will assure the convenience of the tourist. One has but to decide on one's itinerary, and they will advise, out of a mass of collected data, whether it is desirable to follow closely to the chosen route or whether some modification is advisable.

In considering fuel requirements one soon comes to the conclusion that the range of the ordinary two-three-seater light aeroplane is somewhat limited for a long overseas journey. My own machine normally carries, with full tanks, thirty-five gallons of petrol, or sufficient for seven hours' flying. In still air this means a range of something over six hundred miles, as one can never afford to run the tanks empty. It is obvious that if one can increase the endurance of the machine by another two hours or so, one has a useful margin for emergencies, such as a strong head wind, which may curtail the range. The crossing of the Timor Sea, for instance, might cause some anxiety if one's machine were capable of only six hours' flying, for a head wind of fifteen to twenty miles an hour would mean that the machine in these circumstances might just fail to achieve the 500 miles' sea journey. Even if the pilot knows that he can easily reach his destination, a large reserve makes for peace of mind.

Next week I hope to describe the fitting of extra fuel and oil tanks deemed necessary to secure a reasonable margin of safety.

NOTES

by

LORD SEMPILL

A.F.C., F.R.Ae.S.

FROM THE CLUBS

Events and Activity at the Clubs and Schools

CORK

The Cork Aero Club is doing extremely well, and is having its first annual dance on October 26. Lt. Col. Villiers Stuart has very kindly lent his house, which has one of the finest rooms for dancing in the whole of Ireland.

CAMBRIDGE

Flying times for last week at Marshall's Flying School were 23 hr. 50 min. dual and 16 hr. solo. Michaelmas term started during the week, and many members returned to renew their licences and put in some flying practice after the long vacation. Three navigation flights were carried out, and Dr. N. de Bruyne flew to Hatfield.

WITNEY AND OXFORD

A total of 28 hr. 30 min. flying was put in last week, including 5 hr. 30 min. dual and 23 hr. solo. Mr. H. A. Glogauer made a first solo, and a new member is Mrs. J. H. Early. Cross-country flights were made to Hatfield, Bristol, and Sywell, and photographic work was carried out on behalf of Sir Michael Sadler, of University College, Oxford.

READING

A landing competition for members is being organised for Sunday, October 28. This will take the form of coming to rest without use of engine or brakes after throttling back, as near as possible to the centre of the "circle." The competition will commence at 11 a.m. and continue throughout the day. The first dance of the winter season has been fixed for Saturday, November 3.

HATFIELD

The total flying time at the London Aeroplane Club for the month of September was 392 hr. 40 min., and for the past week 54 hr. 45 min. Five new members joined last week—Messrs. J. D. Hewett and C. E. Kay (the New Zealanders who are flying the "Dragon Six" in the MacRobertson Race), Capt. S. Mallett, Mr. I. S. Thomson, and Mr. G. F. Luckie. Mr. and Mrs. Mollinson put in a considerable amount of flying whilst waiting for the finishing touches to be done to their "Comet," which is entered for the England-Australia Race.

CINQUE PORTS

The advent of Winter Time and the general break up in the weather has caused a slight drop in the total flying times for the week, these being 36 hr. in all. During the week Mr. E. L. Shankland went solo for the first time, and successfully passed his "A" licence tests the same day. This is the first time anyone has done this in the club, and it shows his remarkable enthusiasm. Mr. H. J. Yates, of Radiation, Ltd., also went solo—a really good effort, as Mr. Yates is well over sixty years old. He took up flying in order to provide himself with some form of mental relaxation, and he states that it has proved most successful. New members joining the club last week were Mr. D. S. F. Hurt, Sqd. Ldr. A. D. Macdonald, and Mr. W. B. E. Brown. The first two are private owner members, while the latter joined in order to obtain his "A" licence.

NORFOLK AND NORWICH

Most of Mr. J. Collier's time last week was occupied with instruction, but the Tuesday and Wednesday were spent by flying to and from Thornaby-on-Tees with Mr. Michael Bircham. The chairman entertained a number of ex-Service men on Thursday afternoon. After a tour of the premises, which included an inspection of Boulton and Paul's wind tunnel, some were taken for flights in the Club machines. They concluded their visit by having tea in the clubhouse.

Last week's visitors to the Club included Sir Oswald Mosley, who flew to Norwich during the week-end in a "Dragon" piloted by Capt. W. Ledlie.

To-morrow evening many members will be going to Mildenhall for the start of the England-Australia Air Race. The Club approached the Royal Aero Club with a view to getting the race to start from the Norwich Aerodrome, but this was not possible. However, the competitors have been made honorary members of the Club, and possibly one or two may find time to visit Norwich before the start.

The annual ball will take place at the aerodrome on Friday, November 2. Messrs. Boulton and Paul have kindly lent the Club the hangar adjoining the clubhouse, and a special floor is being laid. Tickets are 12s. 6d. each, and may be obtained from the secretary.

IRISH AERO

The Irish Aero Club has had twenty-two hours of flying during the past week, of which fifteen were solo hours. Two new pilot members have joined. On November 2 the club is holding its annual dance at the Gresham Hotel.

LIVERPOOL

Night flying for the winter season began at Speke on October 7, and some enthusiasts put in 3 hr. 10 min.

Very unsettled weather was experienced at Hooton during the week ended last Thursday, but a total of 24 hr. 10 min. in the air was accumulated.

CARDIFF

That members do not spend all their time "in the back garden" was proved by last week's returns, which showed cross-country flights to Birmingham, Bristol, and Porthcawl. Flying time totalled 17 hr. 30 min., made up of 12 hr. dual, 4 hr. 40 min. solo, and 50 min. tests. Two new flying members were enrolled.

MIDLAND

Cross-country flights to Sywell, Cardiff, Yate and Portsmouth were carried out by Castle Bromwich members during the week ended October 11, and flying times totalled 11 hr. 20 min. solo and 21 hr. dual. Two members made successful first solos, and one passed his "A" licence test, while two new members have been enrolled.

A party of eight members flew down to the Cardiff party and dance and had a very cheery time.

SOUTHERN

Flying time by Southern Aero Club machines last week totalled 33 hr., made up of 12 hr. solo and 21 hr. dual. Five new members were enrolled.

On Friday Mrs. H. M. Barnes' "Hawk Major," flown by Mr. J. Sale, completed the following cross-country flights in a flying time 1 hr. 14 min.: Reading-Hanworth, Hanworth-Reading, Reading-Hanworth, Hanworth-Brooklands, Brooklands-Shoreham, Shoreham-Wilmington, Wilmington-Shoreham.

In spite of cold weather a considerable amount of joy-riding was carried out.

FLIGHT

and the

AUSTRALIA RACE

NEXT WEEK'S REPORT NUMBER

NEXT Thursday's issue of "Flight" will contain an interesting description of the scenes at Mildenhall in preparation for the Australia Race, an account of the actual start, together with all available news up to the time of going to press.

Since Baghdad promises to be the most interesting point, and in order that readers of "Flight" may have first-hand information, our own representative, Lt. Com. C. N. Colson, R.N., proceeded to Baghdad in a D.H. Dragon last week and will communicate his impressions by cable of the scenes at the first control—2,530 miles distant.

Later, Com. Colson, who followed the route normally taken by private owners, will have much interesting information to impart, not only of the scenic beauties of such a trip, but also of the difficulties which beset pilots in the course of a journey to Iraq and back. After his return, Com. Colson's articles will throw much useful light upon long-distance air travel abroad and show how flying is facilitated or hindered by the rules and regulations of various countries.

A regular order for FLIGHT should be placed with newsagents.

EVERY THURSDAY.

SIXPENCE.

Private Flying

BROOKLANDS

Total flying time last week amounted to 83 hr.—40 hr. solo and 43 hr. dual. There was a great deal of early morning flying; Capt. Findlay and Capt. MacKenzie have both had pupils at 7.30 a.m. on several mornings.

Future pupils taking the ground instruction course will enjoy the facilities of the new lecture room, which is being built against the outside wall of the main hangar. It is being designed on the same lines as the clubhouse, with a flat roof and plenty of window space all round.

It is interesting to note that the Club has already completed 2,400 hours' flying, and the Air Ministry year does not end until March. Five school machines are constantly in use, with one in reserve.

Coming events include a tea-dance next Sunday, a firework display for the children of the employees of Brooklands on November 3, and a landing competition on October 28. It is proposed to make up a party to go on a sea cruise for three

weeks in January. Flying members who are interested should communicate with Capt. H. D. Davis.

BRISTOL AND WESSEX

During September the 177 hours flying done by the club constituted a record for that month, but the weather in the first fortnight of this month has curtailed flying considerably, to the disappointment of several *ab initios* who are anxious to complete their training.

The new C.30 autogiro is in great demand, Mr. A. H. Phillips, a director of the club, being the first member to fly it solo—after only 1½ hours' dual instruction.

Mr. C. V. Ogden has relinquished his appointment with the club as assistant instructor in readiness for his flight to India with Lady Douglas, and his place has been taken by Mr. A. N. I. Worger-Slade.

A new pilot member is Mr. A. Davenport, who is chief designer at Westland Aircraft Works, Yeovil.

PROGRESS IN AUSTRALIA

Australia's civil aviation will soon be in the forefront, according to an official statement issued recently at Canberra. The policy followed by the Commonwealth Government since it took office in 1932 has resulted in what may be one of the most complete aerial transport systems in existence, linking Australia, by fast services, to a considerable portion of the globe.

This development grew from the appointment in 1932 of an Inter-departmental Committee to advise as to the future policy regarding air transport services. Last year tenders were called for many important services, and this year the Government has accepted all these tenders, save that between the Ord River and Wyndham, and, in addition, has decided to give South Australia direct access to the oversea air service by establishing a weekly service between Adelaide and Bourke. The contract for the Melbourne-Hobart service will ensure a daily service (except Sundays) across the Bass Strait. All the new services should be in operation by the end of the present year, when there will be an increase of approximately 130 per cent.

in the mileage flown annually by regular air services in Australia. It is estimated that the regular air lines in Australia will total 11,000 miles next year, and that, approximately, 1,500,000 miles will be flown during 1935.

In other directions there has been a marked development in what has become an essential factor in the life of a country of such great distances as Australia. Considerable expenditure has been made on improving existing aerodromes and preparing new landing grounds; the rentals charged for the leasing of Government hangars by private aircraft operators have been reduced; and local authorities have been encouraged to establish aerodromes, the number of which has greatly increased. Aero clubs have been assisted; stricter supervision has been maintained over the day-to-day maintenance of aeroplanes; steps have been taken to ensure wireless facilities on the air mail routes where they pass over the sea; while gliding, which stimulates interest in aviation generally, has been encouraged. Altogether, Australia appears to be looking forward to a real future.

THE PILOTS ENTERTAINED

Airmen Become Chairmen for a Short Period at the Banquet given to them by the Royal Aero Club

THE most striking feature of the Royal Aero Club's banquet at Grosvenor House to the pilots of the England-Australia race was not its magnificence nor the number and quality of those present, but the unexpected histrionic abilities of the guests. Every one of the nine who replied to the toast of the pilots, so admirably proposed by H.H. Prince Bismarck, the German Chargé d'Affaires, made some useful contribution, and several were really witty.

Lord Gorell, C.B.E., M.C., the chairman, who proposed the toast of the Races, and the Right Hon. Stanley M. Bruce, P.C., C.H., who replied, actually started a species of humorous discussion. The chairman looked forward to the day when the world would be encircled in a day, and wondered whether, as you gain a day in one direction, you possibly arrive home yesterday. Later in the evening the charmingly relative doggerel about a certain Miss Bright was remembered. The High Commissioner for Australia, on the other hand, after paying tribute to Sir MacPherson Robertson, emphasised the value of the race as a test of reliability as well as speed, introduced a wasp into the argument, reminded the competitors that the race was hardly beginning when they arrived at Darwin, and told a good story to impress Australia's size. He made a brief but admiring reference to the late Sqd. Ldr. Bert Hinkler.

Prince Bismarck, proposing "The Pilots," expressed his regret that the only German entry, that of Herr Hirth, had been withdrawn, but assured everyone that the entire German nation would follow the course of the race with interest and good wishes. He pointed out, too, that the sexes had achieved a degree of equality in aviation that was almost unknown in other sports.

Hereafter the torch was handed to the pilots, and to Col.

Roscoe Turner in particular. Apparently the job of obtaining innumerable passports and visas was rather on his mind, and he hoped that the race might do something to secure the freedom of the air. Mr. Roy Parer, who flew to Australia in 1919, taking eight months over the trip, spoke on similar lines, and said that the pilots were doing their work in this generation to advance the cause of humanity.

By this time it was becoming a little difficult for the people at the other end of the hall to hear everything that was being said, for the microphone was not handed to each pilot as he raised himself regretfully to his feet.

However, Col. Fitzmaurice could be heard dealing with the local racial question and claiming that he would possibly become legendary as a most discerning pilot for choosing a Scotsman as his co-pilot! Capt. C. W. A. Scott caught hold of Lord Gorell's "earth-girdling" remark and reminded us that only air pilots know how large the earth is.

Serious notes were introduced by both Mr. Clyde Pangborn, who is flying with Col. Turner, and Mrs. Mollison. Both remarked that the race was a risky enterprise, and that the pilots knew it. Mrs. Mollison wished all her competitors the best of luck.

Capt. Stack took some time to get into his stride, but was entertaining enough without sound effect, and, after more or less inaudible but mirth-provoking remarks, said that if the British pilots do not acquit themselves well it will not be the fault of our aircraft manufacturers.

Mr. J. H. Wright "wisecracked" his way through a short speech, Mr. Polando had his say, and Mr. J. W. Dulanty, High Commissioner for the Irish Free State, proposed the health of the chairman.

Thereafter the party split up into "discussion groups" or drifted away homewards.

H. A. T.

CRANWELL'S NEW BUILDINGS

Opening by Air Marshal H.R.H. the Prince of Wales

THAT such fine new buildings as those of the R.A.F. College, Cranwell, were worthy of a formal launching on their career of usefulness was generally agreed, and last Thursday they received this signal honour at the hands of Air Marshal H.R.H. the Prince of Wales. The buildings (of which we publish a photograph) have actually been in use for some little time.

The ceremony of declaring the buildings open was felt to be momentous, and it was carried through with every circumstance which could impress its importance on the minds of the Flight Cadets and of all others who were privileged to witness it.

The Prince flew to Cranwell from Fort Belvedere in his "Dragon" and, with the punctuality for which the Royal Family is famous, landed exactly at 13.00 hours. He was received by the Lord Lieutenant of Lincolnshire (Lord Yarborough), the Secretary of State for Air, the Chief of the Air Staff and members of the Air Council, and by the Air Officer Commanding Cranwell. To the delight of everyone, the Prince wore the uniform of an Air Marshal of the Royal Air Force, which he has never worn in public before, and above the rows of his medal ribbons were the "wings" of a pilot in the Service. Unlike his brother the Duke of York, he has never qualified for "wings," though it is generally believed that if he wanted to do so he could qualify without much trouble. The King was once photographed wearing the khaki uniform of the Royal Air Force in the early days of its existence, and His Majesty, as supreme head of the Service, wore "wings" on his uniform. It is obviously proper that the Heir Apparent to the Throne should also wear the most complete insignia of the Service.



The R.A.F. College coat-of-arms

The Prince first inspected the guard of honour, consisting of the whole Cadet Wing, and then entered the great hall of the College. The assembly gathered there made a brilliant display. In addition to the numerous blue uniforms of the R.A.F., there were many naval and military uniforms, some British and some belonging to foreign air attachés, while the two civilian professors of the College wore their university gowns and hoods and the Bishop of Lincoln was in his scarlet robes as a Doctor of Divinity (Oxon). The costumes of many ladies also lent brightness to the scene.

The Marquess of Londonderry (Air Minister) then rose and, after expressing sympathy with Yugoslavia and France for the recent tragedies, said: "I count myself indeed fortunate that the formal opening of these beautiful buildings has taken place during my period of office as Secretary of State for Air. I was First Commissioner of Works for two short periods while they were in building, and so I have personal interest of a very early date in their completion. But, quite apart from this, as Secretary of State for Air, I recognise the great importance of the present occasion, not only to the Royal Air Force College itself here at Cranwell, but to the Royal Air Force as a whole. For, as I see it, this College of Cranwell is the very heart and centre from which the Royal Air Force derives her vitality. Here it is that she continually recruits her strength and year by year renews her inspiration.

"I should be failing in my duty if I did not preface my remarks with an expression of the thought which I know comes first in all our minds to-day, and of the feeling that is uppermost in the heart of every member of the Royal Air Force, and of everyone who, like myself, is privileged



THE SENIOR AIR MARSHAL: H.R.H. the Prince of Wales arriving at Cranwell. With him are seen Lord Londonderry (Air Minister), Air Vice-Marshal G. S. Mitchell (A.O.C. Cranwell), and Lord Yarborough (Lord Lieutenant of Lincolnshire).

to be connected with this young and splendid Service. Your Royal Highness, we welcome you here to-day, and gratefully recognise in your presence amongst us for the formal opening ceremony of the College, the interest which Your Royal Highness takes in the welfare and progress of the Royal Air Force. While we are by some centuries the youngest of the Armed Forces of the Crown, we give place to none in our loyalty and devotion to the service of His Majesty." His Lordship then expressed gratitude to the neighbours of Cranwell for their hospitality and kindness, and regretted that limitations of space had prevented many of them from being present. He also recalled that the College owed its inception to the wisdom and foresight of Lord Trenchard. He then proceeded: "I would have you remember that we see here the finished project of which the foundation stone was laid five years ago by Lady Maud Hoare, wife of a Secretary of State for Air whose eminent services during two periods of administration will ever be gratefully remembered. It is indeed well and significant that the names of Lord Trenchard and Sir Samuel Hoare should be so intimately linked with Cranwell College which stands to the Royal Air Force in the same close and vital relationship as Dartmouth, Sandhurst and Woolwich to the sister Services. On behalf of the Air Council I should like to express our warmest thanks to all those who have aided in the planning and erection of these magnificent buildings, and, in particular, to congratulate Mr. West, the architect, on the success of his design.

"Your Royal Highness, it is my honour and privilege to-day to ask you to be graciously pleased now to declare open the new buildings of Cranwell College. Here will be worthily housed successive generations of cadet officers of the Royal Air Force, from whom will come, not only many great and distinguished servants of King and Country, but also that necessarily far larger company of His Majesty's faithful servants, who, without rising to, or claiming any particular distinction, will none the less unite with their more fortunate brethren in serving him with a loyalty, devotion and selflessness which will ever be the constant inspiration of their life and training here."

The Prince of Wales then declared the new buildings open in the following words:—

"The formal inauguration of this College is a red-letter day in the short history of the Air Force, and I look on it as a great privilege to have been invited as an Air Marshal to perform this ceremony. The story of the founding of this College and the work it has done since 1920, when it was founded by Lord Trenchard, is well known to you. It is a matter of interest to me that the first commandant, Air Vice-Marshal Longcroft, was the first pilot to take me up in an aeroplane sixteen years ago.

"I have paid a visit here before, when the College was unworthily housed, one might say, and I remember the huts and all the rest of it. I think the architecture of this building is very impressive. It reminds me of the Royal Naval College at Dartmouth, where I spent two years as a cadet. The architect, Mr. West, is to be congratulated.

"One word to the cadets who are being trained here just now. The training you are getting is one which will stand you in very good stead whether you remain and make the Air Force your career or even if you leave earlier than you expected. Besides all the various technical subjects you study and the flying you do, you are given the opportunity to keep physically fit through games and sport.

"You have joined a great Service, and though the Air Force is a junior Service it, along with the Navy and the Army, makes for confidence not only throughout the Empire but throughout the world—a confidence which is of vital importance and will continue to be of vital importance until the make-up of the world changes very radically."

Luncheon was then served in the dining hall, after which the Prince went over the College before leaving in his "Dragon." Among those present were Marshals of the Royal Air Force Lord Trenchard and Sir John Salmond, Air Chief Marshal Sir Edward Ellington, K.C.B., Air Marshals Sir R. Brooke-Popham and Sir Hugh Dowding, General Sir Archibald Montgomery-Massingberd (Chief of the Imperial General Staff), Rear-Admiral Sir M. Sueter, and numerous other officers of Air rank.

A PLEASANT PRELIMINARY



FOREGATHERING: Some of the 500 guests at the R.Ae.C. banquet to the MacRobertson Race competitors, held at Grosvenor House, London, last Friday. Lord Gorell, C.B.E., M.C., was in the chair. A report is on page 1096.

THE ROYAL AIR FORCE

Service Notes and News



Air Ministry Announcements

SIR PHILIP SASSOON'S TOUR

Sir Philip Sassoon, Under-Secretary of State for Air, who has been on a most thorough tour of the overseas stations of the Royal Air Force, recently spent a very busy three days at Singapore. In an interview there on October 9 he is reported to have said that Malaya ought to have more landing grounds, and he also advocated permanent runways at all aerodromes, such as there are at Bangkok. He is also reported to have expressed the hope that an Auxiliary Air Force squadron would be established in Malaya. Sir Philip is returning home by Imperial Airways.

GROUP CAPTAIN SMYTH-PIGOTT, D.S.O.

Grp. Capt. J. R. W. Smyth-Pigott, D.S.O., who was appointed air adviser to the Government of Peru last March, has been placed on the retired list at his own request. He was originally in the Royal Navy. In 1913 he learned to fly, and joined the R.N.A.S. During the War he served at the Dardanelles, and as flight commander he made a gallant attempt on November 13, 1915, to cut the Berlin-Constantinople railway by bombing a railway bridge over the Maritza River near Kuleli Burgas from a B.E.2c aeroplane. His bombs missed, but damaged the embankment. For this exploit he was granted the Distinguished Service Order. Two years later he was granted a bar to the D.S.O.

AIRCRAFT HANDS

Applications for extensions of service to nine years in respect of all aircraft hands who desire such extensions and who have already completed six years' service are to be forwarded to the Officer i/c Records as soon as possible, and in any event not later than November 1 next. Thereafter, such applications are to be forwarded on the last day of the quarter in which the airmen concerned complete six years' service.

NO BOMBING RANGE OFF LYDD

The proposal to establish a range for air gunnery and bombing from R.A.F. machines off Lydd, Kent, has been abandoned. The fishing interests objected to the project on the ground that the bombing would greatly damage the fishery in Rye Bay.

CENTRAL FLYING SCHOOL CATEGORIES

The undermentioned officers and airman pilots have been recategorised as under:—

A.2 to A.1:—Flt. Lt. P. D. Cracroft, Flt. Lt. H. L. P. Lester, F/O. W. C. Sheen, and Sgt. Stratton, H.A.C.
B. to A.2:—F/O. W. N. McKecknie and Sgt. Tribe, B. R.
C. to B.:—F/O. H. R. L. Hood and F/O. R. I. Kippenberger.

No. 3 FLYING TRAINING SCHOOL, GRANTHAM

The undermentioned officers have been awarded special assessments on completion of a course of *ab initio* flying training at No. 3 Flying Training School:—

Distinguished Pass

P/O. A. P. Chamberlain, and A./P/O. B. Robinson.

No. 4 FLYING TRAINING SCHOOL, ABU SUEIR

The undermentioned officer and airman pilots have been awarded special assessments on completion of a course of *ab initio* flying training at No. 4 Flying Training School:—

Distinguished Pass

A./P/O. R. G. Musson, A./Sgt. Fernbank, E.P.M., and A./Sgt. Ross, W. G.

No. 5 FLYING TRAINING SCHOOL, SEALAND

The undermentioned officers and airman pilots have been awarded special assessments on completion of a course of *ab initio* flying training at No. 5 Flying Training School:—

Distinguished Pass

P/O. R. E. G. Brittain, P/O. F. A. Paynter, A./P/O. G. J. D. Thomson, A./P/O. P. H. R. Saunders, A./Sgt. Squire, F., and A./Sgt. Graham, J. S.

RE-EQUIPMENT OF UNITS

The following re-equipment of R.A.F. Units has recently taken place:—

No. 41 Squadron ... Demon replaced Bulldog IA.

The following Units are expected to complete or commence re-equipment during the next few months:—

No.	8 Sq.	Vincent	to replace	IIIF G.P.
" 30	"	Hardy	" "	Wapiti.
" 84	"	Vincent	" "	Wapiti.
" 19	"	Gauntlet	" "	Bulldog IIA.
" 24	"	Hart	" "	Osprey.
" 10	"	Heyford	" "	Virginia.
" 36	"	Vildebeest	" "	Horsley T.B.
" 202	"	Scapa	" "	IIIF F.A.A.
" 205	"	Singapore	" "	Southampton.
" 824	"	Seal	" "	IIIF F.A.A.
" 823	"	Seal	" "	IIIF F.A.A.
" 605	"	Hart	" "	Wapiti.
" 811	"	Baffin	" "	Ripon.

CITY OF LONDON SQUADRON

The annual reunion dinner of officers (past and present) of No. 600 (Fighter) City of London Squadron will be held at the Mayfair Hotel (Lansdowne Room) on Saturday, October 20, 1934, at 7.15 for 7.45.

SPECIALISTS IN ARMAMENT

As insufficient applications were received in response to the invitation last year to make good the anticipated shortage in senior armament specialists, the Air Council have decided to continue the special measure of allowing squadron leaders to attend the specialist "A" course at Eastchurch.

Three squadron leaders are required to attend the course beginning in next February in addition to the normal entry of flying officers. Applications will be accepted from those whose seniority in the rank dates from a year not later than 1931, and should reach the Air Ministry by December 17.

MATES

As previously announced a new trade of "mate" is being introduced. The first course of instruction for this trade, lasting six weeks, commenced on August 20, 1934, at the School of Technical Training (Men), Manston. During the initial stages it will not always be possible to arrange for airmen to be employed as mates immediately on qualifying and they will meanwhile be borne against vacancies for aircrafthands, general duties. C.O.s. are, however, to ensure that they obtain as much experience as possible of aircraft maintenance work, pending their employment as mates. Mates will be eligible for duty pay at the rate of 3d. a day, commencing from the date of first assuming duty as such. Thereafter, duty pay will be issuable continuously. The reclassification of mates to aircraftman, 1st class, and to leading aircraftman will be effected by the Officer i/c Records. Mates (and drivers (petrol)) will have better opportunities of advancement to the above classifications than are open to aircrafthands. Mates will, however, be considered equally with aircrafthands for promotion to corporal and to higher ranks. On promotion to corporal they will cease to be employed as mates and will be remustered as aircrafthands (or to any other trade for which they can qualify without a course of instruction and in which vacancies exist).

AIR FORCE LIST

The October issue of the Air Force List has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses:—Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

R.A.F. AERODROMES IN INDIA

It has been decided that, subject to the exigencies of the Services, civil aircraft will be permitted to use R.A.F. aerodromes in India. Though Capt. Tymms, M.C., has a great programme for extending civil flying in India, it will be long before that immense country is adequately provided with civil aerodromes, and this help from the R.A.F. will do a good deal to help progress. Hitherto all the R.A.F. aerodromes have been situated along the North-West frontier, but news is to hand that about 52 acres in the Jhansi district of the United Provinces of Agra and Oudh are being acquired as a landing ground for the R.A.F.

ROYAL AIR FORCE GAZETTE

London Gazette, October 9, 1934

General Duties Branch

The follg. are granted temporary commissions as Flying Officers on being seconded for duty with the R.A.F. (Sept. 17):—Lt. R. C. MacK. Ferrers (The Cameronians), Lt. K. J. McIntyre (The Royal Tank Corps), Lt. R. E. Weld (The Royal Tank Corps).

The follg. Pilot Officers are promoted to the rank of Flying Officer (June 17):—P. R. Robinson, J. F. H. du Boulay.

Flt. Lt. S. H. Hardy is placed on the half-pay list, scale A, from Sept. 19 to 28 inclusive. (Substituted for the notification in the *Gazette* of Sept. 25); Grp. Capt. J. R. W. Smyth-Pigott, D.S.O., is placed on the retired list at his own request (Oct. 8); Lt. J. A. L. Drummond, R.N., Flying Officer, R.A.F., relinquishes his temporary commission on return to Naval duty (Sept. 10); Lt. H. D. Barlow, R.N., Flying Officer, R.A.F., relinquishes his temporary commission on return to Naval duty (April 22, 1932). (Substituted for the notification in the *Gazette* of May 3, 1932).

Medical Branch

F/O. L. S. Everett, M.R.C.S., L.R.C.P., is promoted to the rank of Flt. Lt., with effect from Sept. 4, and with seny. of May 1.

Commissioned Engineer Officers

The follg. Flying Officers on probation are confirmed in rank:—F. G. Hammond (Sept. 11); W. R. Mayes, D.S.M., A.F.M., (Sept. 19).

Erratum

In the *Gazette* of Oct. 2. Notification concerning Flt. Lt. (Hon. Sqd. Ldr.) J. G. Skeet, M.R.C.S., L.R.C.P. For April 7 read April 14.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Group Captain.—C. W. H. Pulford, O.B.E., A.F.C., to Air Armament School, Eastchurch, 1.10.34. To Command vice Wing. Com. E. H. Sparling, A.F.C.

Wing Commanders.—O. G. W. G. Lywood, O.B.E., to Headquarters, Coastal Area, Lee-on-Solent, 1.10.34. J. H. Simpson, to D. of O., Dept. of Chief of the Air Staff, Air Ministry, 1.10.34. Vice Wing Com. O. G. W. G. Lywood, O.B.E.

Squadron Leaders.—E. B. Grenfell, A.F.C., to R.A.F. Base, Malta, 28.9.34. For Armament duties vice Sqd. Ldr. P. M. McSwiny. G. O. Venn, to School of Army Co-operation, Old Sarum, 1.10.34. For flying duties vice Sqd. Ldr. R. M. C. Macfarlane, M.C. F. R. Wynne, M.B.E., to Anti-Aircraft Co-operation Flight, Biggin Hill, 1.10.34. To Command vice Sqd. Ldr. G. O. Venn. V. R. Gibbs, D.S.C., to D. of O., Dept. of Chief of the Air Staff, Air Ministry, 1.9.34. C. W. Hill, to No. 1 (F) Squadron, Tangmere, 1.10.34. To command vice Sqd. Ldr. R. W. Chappell, M.C. J. R. I. Scambler, A.F.C., to No. 2 Armoured Car Company, Ramleh, Palestine, 13.9.34. To command vice Wing Com. J. P. Coleman, A.F.C.

Flight Lieutenants.—H. L. McCulloch, to No. 101 (B) Squadron, Andover, 1.10.34. E. S. Steddy, to No. 2 Flying Training School, Digby, 1.10.34. H. L. Beatty, to No. 210 (F.B.) Squadron, Pembroke Dock, 17.9.34. J. D. Greaves, to No. 57 (B) Squadron, Upper Heyford, 1.10.34. S. R. Groom, to No. 47 (B) Squadron, Khartoum, Egypt, 19.9.34. S. H. Hardy, to No. 216 (B.T.) Squadron, Heliopolis, Egypt, 29.9.34. A. A. Jones, to No. 40 (B) Squadron, Abingdon, 4.10.34. A. Hesketh, D.F.C., to No. 2 Flying Training School, Digby, 8.10.34. J. N. T. Stephenson, to Station Headquarters, Worthy Down, 8.10.34.

Flying Officer.—W. M. Hargreaves, to No. 24 (Communication) Squadron, Hendon, 2.10.34.

Pilot Officers.—C. H. Brandon, to No. 201 (F.B.) Squadron, Calshot, 3.10.34. M. Dawnay, to Headquarters, Fighting Area, Uxbridge, 2.10.34. M. D. Thunder, to No. 210 (F.B.) Squadron, Pembroke Dock, 17.9.34.

Acting Pilot Officers.—R. A. Charles-Auckland, to No. 3 Flying Training School, Grantham, 1.10.34. H. A. R. Holford, to No. 5 Flying Training School, Sealand, 1.10.34.

The following Acting Pilot Officers are Posted to No. 3 Flying Training School, Grantham, on 29.9.34. for flying training:—

6th WING R.N.A.S. AND 66th AND 67th WINGS R.A.F., ADRIATIC GROUP—RE-UNION DINNER

A re-union dinner of officers and airmen who served in any of the above units will be held at the Chancery Restaurant, Frith Street, London, W., on October 20th, 1934, at 6.30 p.m. for 7 p.m. The cost of the dinner is 5s. 6d., exclusive of wines. Tickets and particulars may be obtained from Mr. W. H. Tysoe, 190, Tufnell Park Road, London, N.7.

R.A.F. BOXING ASSOCIATION

The Lord Wakefield Competition for teams of novices representing stations will take place on Wednesday and Thursday, October 31, and November 1, at Henlow.

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers

General Duties Branch

The follg. Pilot Officers are promoted to the rank of Flying Officer:—P. H. Meadway, W. H. Craven (May 16); N. V. Lindemere (July 17); C. P. Aron (Sept. 1).

The follg. Flying Officers relinquish their commissions on completion of service:—F. W. Moncreiff (July 12); C. A. S. Parker (Sept. 16); D. G. K. Walker (Sept. 21).

The follg. Flying Officers relinquish their commissions on completion of service and are permitted to retain their rank:—W. R. Bannister (since deceased) (June 29); R. A. C. Brie (Sept. 12).

The commissions of the follg. Pilot Officers on probation are terminated on cessation of duty:—J. T. Cain (Sept. 12); R. M. Wilkinson (Sept. 14).

Stores Branch

F/O. H. A. Lotherington is promoted to the rank of Flt. Lt. (Oct. 2) (substituted for the notification in the *Gazette* of Oct. 2).

SPECIAL RESERVE

General Duties Branch

P. A. Simpson is granted a commission as Pilot Officer on probation (Aug. 18); P/O. P. S. Rook is promoted to the rank of Flying Officer (Sept. 16).

AUXILIARY AIR FORCE

Medical Branch

No. 601 (COUNTY OF LONDON) (FIGHTER) SQUADRON.—J. H. Williams, M.R.C.S., L.R.C.P., is granted a commission as Flying Officer (Sept. 11).

T. G. W. Appleby, E. G. Campbell-Voullaire, W. E. Casley, G. F. Chater, R. N. Coad, W. I. Collett, J. A. Dimalow, K. N. M. Eyres, C. E. E. Florigny, W. Foulsham, G. D. Garvin, J. N. Glover, T. B. Hunter, F. J. O. Lasbrey, W. A. L. Locker, J. P. Marriott, J. Mercer, C. H. Mitchell, E. T. T. Nelson, V. R. Oats, W. O. Pridham, K. J. Rampling, B. Samson, D. G. Scott, D. C. Smith, L. J. Stickley, C. N. Swann, T. M. Tinker, W. G. Wells, R. P. Widdowson, T. B. Yule.

The following Acting Pilot Officers are Posted to No. 5 Flying Training School, Sealand, on 29.9.34. for flying training:—J. Addison, G. B. M. Bell, B. G. Carroll, W. C. A. Church, A. N. Cole, S. E. F. Curry, A. S. Downes, G. P. Flew, R. G. Forshaw, B. S. Francis, K. C. Gill, G. E. Harrison, F. A. Holmes, H. J. Irens, M. J. Keating, I. E. Lloyd-Jones, D. C. R. Macdonald, K. J. Mellor, J. C. Millar, W. M. Norman, H. M. Pinfold, J. J. Raine, R. P. Russ, R. F. See, R. N. Smith, W. E. Surplice, T. G. Tideman, J. B. Voyce, D. Walker, and C. A. Wood.

Stores Branch

Flight Lieutenants.—C. I. Fry, to No. 2 Stores Depot, Altrincham, 1.10.34. C. H. Pownall, to No. 2 Flying Training School, Digby, 1.10.34.

Accountant Branch

Flight Lieutenant.—J. M. Adams, to No. 2 Flying Training School, Digby, 1.10.34.

Flying Officer.—R. F. Fleming, to R.A.F. Base, Malta, 28.9.34.

Legal Branch

Squadron Leader.—W. I. Grantham, to Headquarters, R.A.F., Middle East, Cairo, 29.9.34. For duty as Deputy Judge Advocate General vice Sqd. Ldr. G. S. Marshall, O.B.E.

Medical Branch

Squadron Leaders.—T. V. O'Brien, to Marine Aircraft Experimental Establishment, Felixstowe, 1.10.34. For duty as Medical Officer. W. F. Wilson, M.C., to No. 2 Flying Training School, Digby, 3.10.34. For duty as Medical Officer. H. McW. Daniel, to Station Headquarters, Hendon, 27.9.34. For duty as Medical Officer.

Flight Lieutenant (Medical Quartermaster).—W. King, to R.A.F. General Hospital, Palestine and Transjordan, 29.9.34.

Flight Lieutenant.—J. Magner, to Station Headquarters, Netheravon, 8.10.34.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

MAKING FOR SAFETY

Some general thoughts on the use of modern flying equipment in air line operation

IN every form of transport that depends to the slightest extent on the human factor, an occasional accident is a mathematical inevitability. Sooner or later a signalman "forgets" an odd goods train, a driver fails to see a danger signal, or a ship's officer is a little slow in his reactions to emergency, and the safest vehicles are those running in a system where the lord of creation is simply not allowed to make mistakes—where, in fact, he has invented complete checks on his own unreliability.

Flying, if it is to become the safest mode of transport, must depend less and less upon the operation of merely human faculties. When, in fact, machines can be safely left to their own devices the air will have been conquered.

Meanwhile, the pilot or navigator's skill must be supplemented by all the aids that are at present available, if the number of fatal accidents is not to increase in direct proportion to the number of miles flown. During good weather an experienced pilot can be depended upon to bring a machine over a route with no help more fearsome than that given by a map and a compass, but in bad weather the whole thing becomes more complicated, and it might be criminal, in certain circumstances, to hand a load of passengers into the keeping of the most skilful pilot so equipped.

Is everything possible being done to safeguard the lives of the passengers? So long as a few pilots consider flying to be an adventure where certain risks must be taken, it has failed as a means of transport. "Let's have a crack at

it" would have been brave words in 1919, but they are the words of a scatterbrain in 1934. Either the pilot knows for certain that he can get through, or get back, or he should never start.

With wireless equipment the pilot can be given every scrap of available meteorological information at any moment of his flight. In less than a minute after the request he can be provided with his position to a mile if he is within call distance of Croydon. All he has to do is to run his generator at request, Croydon, Pulham, and Lympne will each take D/F bearings and the point of intersection is the machine's position without a shadow of doubt. If he reports, or asks for, his position at regular intervals, Croydon will give him a safe height at which to fly with regard to other machines. At some aerodromes he can even be "led in" through fog.

Croydon, with the aid of wireless, will, in fact, "wet nurse" him from the start to the finish of his flight.

To the practised, blind flying is not difficult, nor should it even be a nervous strain, so there is no excuse for "contour chasing" save in special circumstances or when coming in to land—the pilot having been given the "all clear" by wireless. Some of our air line pilots fly at night and in cloud for hours at a time, and there is any amount of room at the top. Passengers enjoy flying above the clouds, and are usually imperturbable while flying in them, particularly if a cabin altimeter shows five thousand feet. Some inventor might devise a windscreen

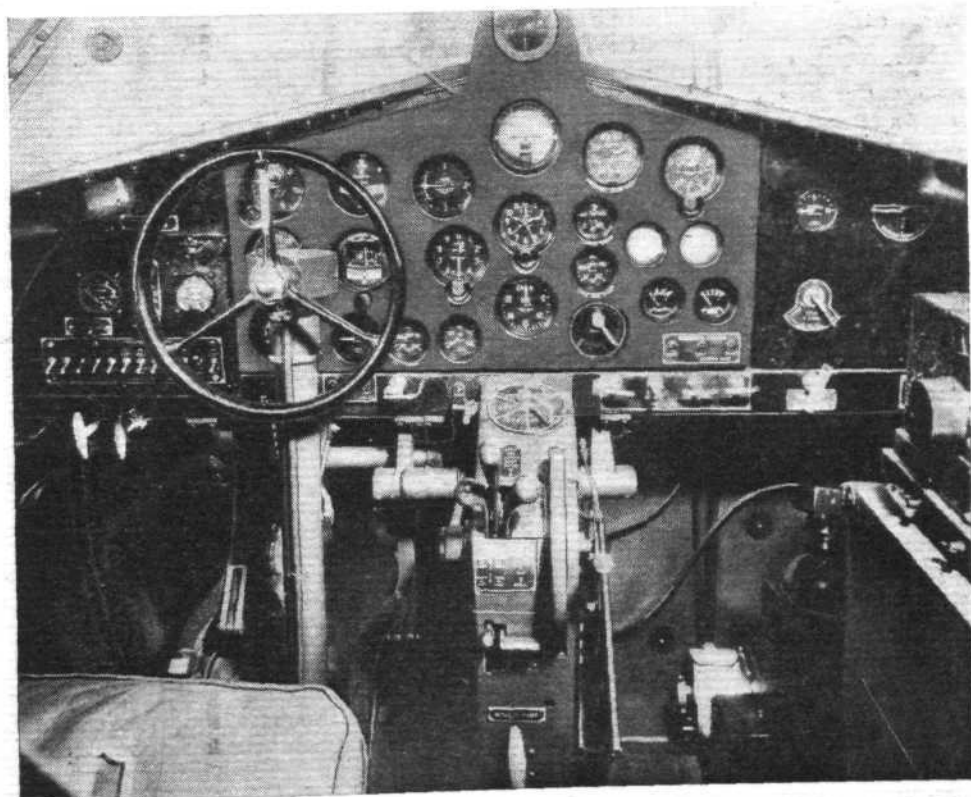
arrangement which will give perfect visibility in all weathers, and another might produce an altimeter which will show height above the ground.

Briefly, the ideas in the ranks of the "ordinary interested parties" are that:

1. All machines carrying passengers "for hire and reward" should be fitted with wireless over routes longer, say, than twenty miles, and, in winter, every machine should have either a wireless operator, or, alternatively, an automatic pilot. Under difficult conditions a pilot can hardly be expected to pay proper attention to the wireless part of the business.
2. All "B" licensed pilots should have a great deal more experience of blind flying than is necessary merely to pass the test that has recently been added to the list.
3. All pilots should have a complete knowledge of modern civil air rules, regulations, and unwritten laws. I met recently a "B" pilot who had never heard of the control area, and, incidentally, whose only reliable method of flying from A to B was by following a railway line.

If no new aid was invented for the benighted pilot, a ninety-nine per cent. safety factor should, with care, be possible always.

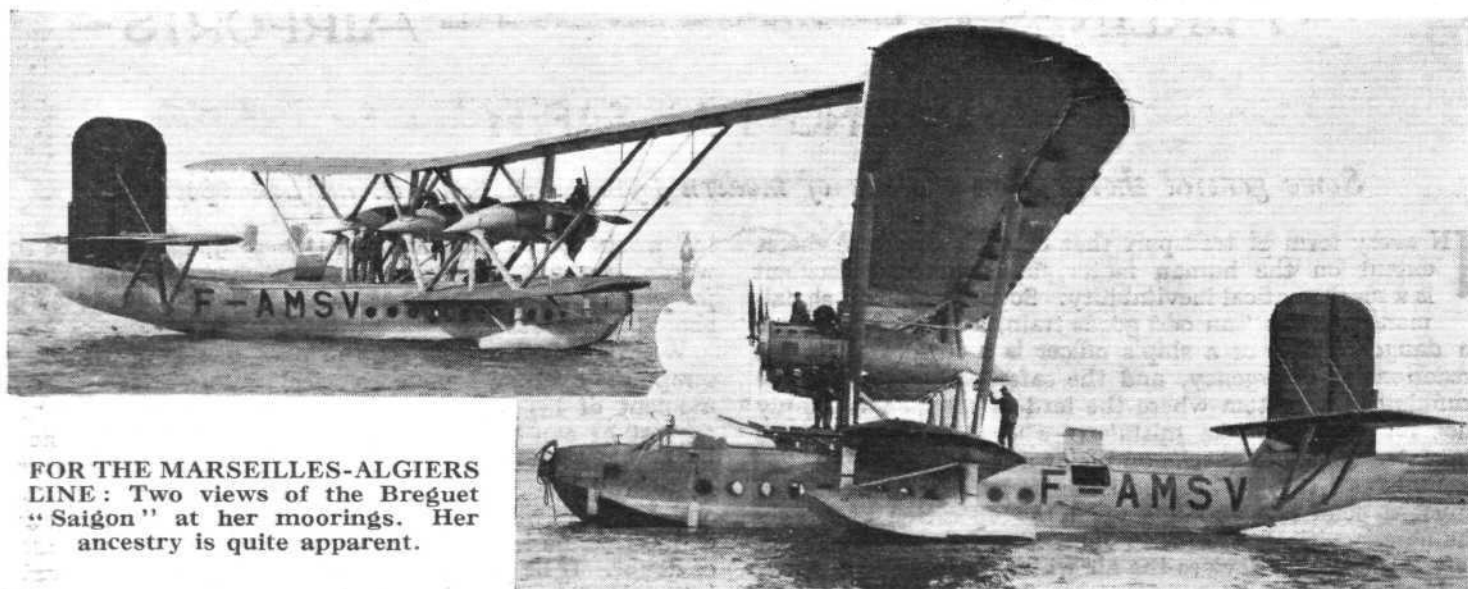
H. A. T.



A MODERN "CONTROL ROOM": The cockpit of the single-engined Vee V-1A, which cruises at 215 m.p.h. The usual instruments for normal and blind flying can be seen, as well as the airscrew pitch adjustment, and the flap and undercarriage retraction controls.

THE BREGUET "SAIGON"

A Commercial Flying Boat Developed from the Short "Calcutta," three of which were bought by the Breguet Firm in 1930



FOR THE MARSEILLES-ALGIERS LINE: Two views of the Breguet "Saigon" at her moorings. Her ancestry is quite apparent.

A NEW Breguet commercial flying boat, the "Saigon," which has been undergoing its trial tests at the San Raphael base, should be in operation on the Marseilles-Algiers line of Air France during this month.

This machine has accommodation for nineteen passengers. It is equipped with three Hispano-Suiza type Ybrs engines, rated at 835 h.p. each at sea level, and weight, loaded about 14 tons, being a counterpart of the military seaplane "Bizerte" recently put in service by the French Navy. While the hull is somewhat similar to that of the Short "Calcutta," the wing structure differs greatly, the Breguet machine being constructed as a sesquiplane.

The "Saigon" has an upper wing span of 35.06 ms. (114 ft.) and a lower one of 18.89 ms. (61 ft. 5 in.). The wings are mounted at a dihedral angle of 3 deg. with an incidence of 4 deg. They have an aspect ratio of 10.2 with a constant chord their entire span and terminate in rounded ends.

Wing Structure

Three duralumin spars, one of which is mounted along the leading edge, the second along the trailing edge, and the main spar in the centre, are braced by a double system of interlaced duralumin ribs (in "X" form) joined by steel fittings, which assure a rigid construction to take the torsion loads. The wings are covered with fabric.

The upper wings consist of two parts, a centre section and two outboard panels, while the lower wing is constructed in four parts. The two sections, inboard from the engine nacelles, are built into the fuselage, and have but two spars, the central spar installed in the two outboard panels being replaced by a rigid skin covering, forming a "cat walk" for access to the engines while in flight. The upper and lower wings are interconnected and braced by a system of slanting "Vee" streamlined struts, which also support the engine nacelles. The trailing edges of the wings are equipped with flaps of the special Breguet automatic trailing edge type. All the wing and strut fittings are made of stainless steel. The total wing area is 169.75 sq. ms. (1,827 sq. ft.).

The hull, which is 20.3 metres (67 ft.) in length, with a beam of 11 ft., and with a total height of 8 ft. 6 in., is of rectangular form, with a concave "Vee" bottom constructed with two steps. Aft of the second step, the hull takes an oval shape and tapers down towards the stem. The upper portion and framework are constructed of duralumin, treated by the anodic oxidation process to resist corrosion, while the bottom is constructed of stainless steel up to slightly above the water line.

The hull structure consists of transverse frames reinforced by closely spaced longitudinal stiffeners and covered by a duralumin plating, which also serves as a stress-carrying member. This framework is further reinforced by three heavy transverse frames, two of which are in line with the spars of the centre section of the lower wing and into which these spars are built.

A hold for baggage and equipment is installed in the bow of the hull, aft of which is located the radio room. The seats of the pilot and his assistant are side-by-side in an enclosed compartment, adjoining that of the radio operator, the roof of which is raised and transparent. A cabin with accommodation for eleven second class passengers is located aft of the pilot's compartment, adjoining which is another cabin fitted to receive six first class passengers, while, still further aft, is a stateroom for two people. There is room, therefore, for nineteen passengers. All these cabins are well lighted.

A lavatory, a kitchen and a pantry are installed in the after part of the hull, while a large luggage hold is located in the extreme stern.

The wing tip floats are mounted nearly 20 ft. from the centre of the hull. Their upper portions are constructed of duralumin, while stainless steel has been used for their bottoms, which have a "Vee" shaped concave form with a single step.

The fixed tail plane is constructed with two spars, the front of which forms the leading edge. The spars, together with the frame work, are of duralumin and covered with fabric.

The fin has a square form with a rounded upper corner and is secured directly to the hull. It has a surface area of 64 sq. ft. (5.95 sq. ms.) and is braced by wire cables to the fixed horizontal tail plane, which is in turn fastened to the hull by a bracing of three "Vee" struts on each side. The rudder is also square in form and has a surface area of 48 sq. ft. (4.45 sq. ms.), while the trailing edges of the elevators and rudder are equipped with compensating flaps adjustable in flight.

The Power Plant

Three Hispano-Suiza 12-cylinder engines are used, these being water-cooled, geared (2:3), type 12 Ybrs. They are rated at 835 h.p. each, at ground level. These engines are lightly supercharged and produce 887 h.p. at 7,500 ft., and have a total capacity of 36 litres. They are fitted with three-bladed Gnome and Rhone steel propellers, with pitch adjustable at ground level.

The engine nacelles are located in the "Vee" strut inter-bracing between the wings. They consist of three sections. The engine mountings, constructed of duralumin tubes, occupy the forward part; the fuel tanks, separated by a fire wall and supported by a heavy circular duralumin frame, are located behind the engines; while the oil tanks are in the extreme rear of the nacelles. The total capacity of the fuel tanks is some 1,000 British gallons, giving a flight radius of 1,250 miles. For the Marseilles-Algiers trip only 540 gallons will be carried, giving a cruising radius of 700 miles. Equipped for this trip the "Saigon" will weigh 13,800 kgs. (approx. 14 tons), and will carry a pay load of 2,000 kgs. (4,409 lb.).

The estimated performances are as follow:—Maximum speed 230 km/hr (143 m.p.h.), cruising speed 190 km/hr (118 m.p.h.), ceiling 5,000 ms. (16,000 ft.), flight radius 1,100 kms. (700 miles).

R. C. W.

CROYDON

A Veteran at Five : Flying to a New "Goal" at Geneva : "Hengist"—Hospital Ship : Visits from England-Australia Machines

THE outstanding air traveller of the week was Master Trenchard John Fowle, aged five, who was making his fourth trip to Kaweit, Iraq, in company with his parents. He is the hardened air traveller, and merely looks scornful if you mention air sickness.

He arrived at Croydon last Saturday, casting critical glances around. On the tarmac he broke away from his nurse and introduced himself to Capt. Walters, of Imperial Airways. After a few minutes' chat these two old hands entered the cockpit of *Hengist*, where they seemed to be immersed in technical matters far beyond the ken of the average passenger.

In his seat in the cabin later, Master Fowle produced from his attaché case a jig-saw puzzle; he has done this sort of thing so often that looking out of windows no longer interests him much. One of his best adventures, he will tell you, was when, forced to descend for weather near Crete, he was rowed ashore in a rowing boat, which archaic form of travel intrigued him immensely.

During the week one of the Air France passengers was Mr. W. V. Lewington, who was to referee in a football match between Czechoslovakia and Switzerland at Geneva. Let us hope he has better luck than the average Englishman who takes part in international affairs in that city.

Last Saturday an ambulance flight over London was arranged by the Red Cross, Croydon Air Section, of which Capt. Schofield is commandant, and Mr. Broome, of H.M. Customs at Croydon, an active member. Arrangements were made with Imperial Airways whereby *Hengist* appeared in the rôle of hospital ship, complete with doctors, nurses and patients, stretcher cases, walking and sitting cases and (it is supposed) an all-pervading smell of iodine to lend verisimilitude.

Capt. Schofield, by the way, is a director of General Aircraft, Ltd. This firm is moving from Croydon to Hanworth in the near future, to the regret of everybody at Croydon. Nevertheless, the principle is sound—the Airport of London

must in the very near future be reserved for commercial traffic.

I wonder when Croydon will awaken to the fact that airports all over the Continent are actively engaged in experiments with radio beacon fog landing systems? And that Amsterdam is being enlarged to something like 1,800 by 1,300 yards, and Berlin likewise? Liverpool, Hull (probably), and Manchester—if the obstructionists are quelled—are planning real airports of ample size and reasonable gradients, with every modern facility; Croydon, which was never good, will become the worst airport in England.

The first of the Australia race machines to arrive at Croydon was a D.H.89 with New Zealand registration letters. It was flown by Messrs. Kay and Hewitt and housed in Wrightson and Pearce's hangar, where wireless was fitted. Olley Air Service, Ltd., had an interesting charter on Sunday. Contrary winds delayed the K.L.M. Scandinavian Air Express, on board which were Mr. Aler, flying superintendent of the K.L.M., and Capt. Geysendorfer, also of K.L.M., who is flying the *Pander Postjager* in the race. As soon as the K.L.M. machine landed, Capt. Olley conveyed the K.L.M. party, with Capt. Leverton, to Mildenhall, where special permission to land had been obtained.

Railway companies are not too proud to take a leaf out of the air transport book. My eye caught a paragraph last week about an express from London to Nottingham and a broken connecting rod which ploughed up the permanent way, causing considerable alarm and confusion. "The train," said the newspaper, "continued its journey with one engine"—which is exactly what an up-to-date twin-engined aeroplane would do in the very unlikely event of a broken "con-rod."

By the way, I heard an elderly railway executive refer to aviation as an "ancillary" service. Is it not delightful to think that swift air transport to and from India, Australia, the Netherlands Indies, and Cape Town is regarded at railway stations as "ancillary" to the train connections to and from Wigan and so on?

A. VIATOR.

WINTER MAILS TO EUROPE

THE latest times of posting on week-days, and of delivery of air mails to various parts of Europe will now, and until further notice, be as follows:

AUSTRIA (Vienna): 5.0 a.m. (next morning); 8.0 p.m. (next evening).
 BELGIUM (Brussels): 6.15 a.m. (same afternoon); 11.30 a.m. (same evening); 8.0 p.m. (first delivery next morning).
 BULGARIA (Sofia): 5.0 a.m. (second morning).
 CZECHOSLOVAKIA (Prague): 1.0 p.m. (next morning); 8.0 p.m. (next afternoon).
 DANZIG: 5.0 a.m. (first delivery next morning); 8.0 p.m. (next day about noon).
 DENMARK (Copenhagen): 5.0 a.m. (same evening); 7.0 a.m. (first delivery next morning); 8.0 p.m. (next morning).
 ESTONIA (Tallinn): 8.0 p.m. (next evening).
 FINLAND (Helsingfors): 7.0 a.m. (next evening).
 FRANCE (Paris): 7.30 a.m. (same afternoon); 11.0 a.m. (same evening).
 (Lyons and Cannes): 8.0 a.m. (same evening).
 (Marseilles): 8.0 a.m. (same evening if express fee paid); 8.0 p.m. (ex. Sat.) (next evening).
 GERMANY (Berlin and Hamburg): 5.0 a.m. (same evening); 8.0 p.m. (next morning).
 (Cologne): 6.15 a.m. (same evening); 11.30 a.m. (same evening if express fee paid).
 (Most Parts): 7.0 a.m. (first delivery next morning).
 (Cologne, Hanover and Munich): 8.0 p.m. (first delivery next morning).
 GIBRALTAR: 11.0 a.m. (second evening).
 GREECE (Athens): 8.0 p.m. (third day).
 HOLLAND (Amsterdam): 5.0 a.m. (same day about noon).

HOLLAND, Cont.—(Rotterdam and Amsterdam): 7.0 a.m. (same afternoon); 11.30 a.m. (same evening); 1.0 p.m. (first delivery next morning).
 HUNGARY (Budapest): 5.0 a.m. (next morning); 7.0 a.m. (next evening if express fee paid); 8.0 p.m. (first delivery second morning).
 ITALY (Milan, Genoa and Venice): 8.0 a.m. (next morning).
 (Rome): 8.0 a.m. (next afternoon); 8.0 p.m. (next evening if express fee paid).
 (Venice): 8.0 p.m. (next afternoon).
 LATVIA (Riga): 8.0 p.m. (next afternoon if express fee paid).
 LITHUANIA (Kaunas): 8.0 p.m. (next afternoon).
 MALTA: 8.0 p.m. (Tues. and Thurs.) (second evening); 8.0 p.m. (Sat.) (third evening).
 NORWAY (Oslo): 7.0 a.m. (next morning); 8.0 p.m. (first delivery second morning).
 POLAND (Warsaw): 5.0 a.m. (first delivery next morning); 1.0 p.m. (next afternoon).
 ROUMANIA (Bucarest): 1.0 p.m. (second afternoon); 8.0 p.m. (second evening if express fee paid).
 RUSSIA in EUROPE (Moscow and Leningrad): 8.0 p.m. (second morning).
 SPAIN (Barcelona): 11.0 a.m. (next morning); 8.0 p.m. (ex. Sat.) (next evening if express fee paid).
 SWEDEN (Malmo): 5.0 a.m. (same evening); 8.0 p.m. (next morning).
 (Stockholm): 7.0 a.m. (first delivery next morning).
 SWITZERLAND (Bale and Geneva): 8.0 a.m. (same evening if express fee paid).
 (Elsewhere): 8.0 p.m. (next evening).
 TURKEY (Istanbul): 5.0 a.m. (second morning).
 YUGOSLAVIA (Belgrade): 5.0 a.m. (next afternoon); 8.0 p.m. (second morning).

On and after October 10, the latest time of posting for the Dutch East Indies will be 1.0 p.m. on Wednesdays.

South-West African Developments

Early next year a service will probably be run between Cape Town and Windhoek, following a route either by Port Nolloth and Keetmanshoop, or by Van Rhynsdorp and Kalkfontein. There is a dangerous section over the Richtersveld, so it is probable that the second route will eventually be followed.

This service will be run by South-West Africa Airways, which are now operated under the S.-W. African Administration.

Later it is possible that the line will be extended to Lobito Bay, with the assistance of Anglo-African Airways, who have for some time been scheming for an express air service between Europe and Cape Town.

A Monster for Glasgow?

An engineer, Mr. James W. Gray, has advanced a proposal for the establishment of an aerodrome in the heart of the city of Glasgow. He recommends that the ground floor and the first floor could be used as a parking space, while the upper floors could be used for the accommodation of machines.

Lord Provost Swan is interested in the proposal, but he is not prepared as yet to endorse the suggested site. He is convinced, however, that Glasgow needs such an aerodrome, in order that the city may be in the forefront of aerial undertakings in Scotland.

Mr. Gray visualises such an aerodrome as the starting place for the American seadrome system and also as the terminus for the European land 'plane system.

Commercial Aviation**HESTON***The Boeing at Heston : Pioneering a Desert Route : By "Leopard Moth" to the Dutch East Indies : A Henlys Party : A New Charter Firm*

TWO MacRobertson Race competitors, Col. Roscoe Turner and Mr. Clyde Pangborn, the first of the American entrants to arrive in England, landed at Heston on October 8 in their Boeing 247-D Transport. The other member of the crew is Mr. R. Nichols, the wireless operator, who has been working on the two-way telephony and telegraphy radio installation, which was tested in flight last Thursday afternoon. Two receivers are carried, one working on wavelengths of 15 to 1,500 metres, and the other on wavelengths of 450 to 1,500 metres. When Col. Roscoe Turner, incidentally, landed after a test flight, George O'Brien, the American film star, was acting a scene on the tarmac. They are old friends who last met in California, and Col. Turner had, in fact, intended to take George O'Brien with him on the Australia race. The result of this lucky coincidence will be seen by the public in the film "The Cowboy Millionaire," to be released by the Fox Film Company at the end of the year.

Mr. and Mrs. R. W. H. Knight, of Kano, Nigeria, left Heston on October 9 to fly home *via* France, Spain, and a new desert route which they hope one day to open up for regular traffic. This route leads almost directly south from Algiers, and has only once been flown before. On that occasion the pilot was a Frenchman, Capt. Wauthier, who stayed with them after the completion of his flight. They are flying a Blackburn "Bluebird" (Gipsy I), formerly the property of Lord Malcolm Douglas-Hamilton. They intend to carry a small wireless set, which is being posted out to Algiers to save weight on the earlier part of the trip. The first motor convoy of the season is scheduled to leave Algiers for Kano about October 23, and they hope to be able to follow, in the absence of landmarks, the wheel tracks in the sand.

A "Fox Moth" left Heston for India last Thursday, piloted by Flt. Lt. Sullivan. The aeroplane is going out to join Capt. Barnard's air circus, with which it will carry out joy-riding. Two passengers are travelling in the cabin, one of whom is the ice-hockey international, F/O. H. E. Mayes. The party is travelling *via* Rome, Cairo, and the Persian Gulf.

Some curiosity was aroused on the 10th, when a red "Leopard Moth," with no registration markings whatever, landed, and its crew cleared Customs outwards. It turned out

to be attached to the Portuguese Air Force, and the two officers in charge, Senhor Humberto da Cruz and Senhor Carlos Bleck, left at 11.15 a.m. for Paris on the first stage of a flight to Portugal, and then on to Timor in the Dutch East Indies. An extra petrol tank has been fitted to their machine.

Henlys Ltd., whose aviation department flourishes at Heston, are organising a ball at Grosvenor House on October 19, in connection with the Motor Show. Exhausted revellers possessed of "two-in-the-morning" courage will, at 3 a.m., transfer to a motor coach and proceed swiftly to Morden Aerodrome to see the start of the MacRobertson Race at 6.30 a.m. By 11 a.m. they will be back in London bemoaning the fact that it is either too late or too early to go to bed.

Capt. G. W. Ferguson, of the Airwork staff, piloted the Director of Civil Aviation, Col. F. C. Sheldermine, to Cranwell on Thursday to attend the opening by the Prince of Wales of the new buildings. They travelled in the Avro "Commodore."

A new private charter concern operating from Heston is Warden Aviation, also of Old Warden Aerodrome, Biggleswade. The initial scheme was hatched out over a year ago by Mr. R. O. Shuttleworth, a well-known aeroplane owner with his own private landing ground at Biggleswade. One of his joy-ride passengers was Mr. A. J. Edmunds, an electrical engineer, who later learned to fly and took his pilot's "B" licence and ground engineer's "A" and "C" licences. After six months with the De Havilland Aircraft Company, and a short period as a ground engineer at Heston, he joined Mr. Shuttleworth in June, 1934. Soon afterwards the Old Warden landing ground became a licensed aerodrome, on which repair and overhaul work was handled by the two partners. Now they have launched forth on private charter and "fly yourself" services at Heston, which (by flying and servicing their own machines) they are able to offer at very advantageous prices. These range from 30s. an hour upwards (excluding fuel) for "fly yourself," and upwards of £2 an hour, inclusive, for charter and freight services. Their present aircraft equipment comprises two Desoutters, two Comper "Swifts," and a Cirrus III "Moth."

Hull Has Its Troubles, Too

Close on the heels of Manchester's Ringway squabbles comes the news that the Hull Corporation Aerodrome Committee is faced with a similar problem. Hedon, it seems, is considered to be inadequate for the purpose; either it must be extended and altered or an entirely new site must be provided.

The cost of extending the aerodrome may be anything up to £130,000, as a railway lies to the north and a main road to the south.

A Paying Air Line

Mr. Nevill Vintcent, D.F.C., manager of the Tata Air Line, is now on a visit to this country, and is able to report all well with the weekly service Karachi-Bombay-Madras. Though the service is unsubsidised it is now showing a profit, and the weekly loads of mails are growing too big for the capacity of the "Puss Moth" with which the line is operated. Mr. Vintcent is on the look-out for a type which has greater capacity and which will be suitable in other respects. He has no objection to wooden construction. It may not last quite so long as metal will do, but then, he says, a wooden machine will probably last until the weekly weight of mails has outgrown its capacity and the line has to seek a still more capacious machine.

The policy of the firm is unchanged in preferring mails to passengers as cargo.

As for the projected Bombay-Calcutta daily service, which H.E. the Viceroy recently said he hoped to see soon in operation, nothing can be said except that negotiations between the firm and the Government of India are still proceeding. It was gratifying to hear the high opinion expressed by Mr. Vintcent of Capt. Tymms as Director of Civil Aviation in India, even though it is sometimes the duty (and probably the unpleasant duty) of the D.C.A. to turn down proposals put up by the enterprising firm of Tata Sons, Ltd.

By Air to Lundy Island

A regular service will be operated next summer from Barnstaple aerodrome to Lundy Island. This is likely to be quite a popular line, as, in bad weather, the steamers sometimes "wait outside" Lundy for long periods, and the trip by air, in any case, should take little more than a quarter of an hour.

Actually, during the past month a Monospar flown by Messrs. Boyd and Nash, of the Barnstaple club, has carried 48 passengers to the island in experimental flights.

The landing ground in Lundy is privately owned, and commercial machines are not permitted to land, but all private owners are welcome. It is being enlarged, and at present there is a run in all directions of some 400 yards, but owners are advised to obtain information about the peculiarities of both wind and ground before making the passage. Such information is available at all times at Barnstaple Aerodrome.

Air France's Winter Arrangements

Several changes are noticeable in Air France's time-table for winter operations. The Morocco section is now operated twice a week in each direction by the three-engined Breguet 393 T. recently illustrated in *Flight*. This machine does not stop at Rabat, but ground transport is provided from Casablanca. There is a daily service between Marseilles, Barcelona, Tangiers and Casablanca, though the outward machine does not land at Tangiers on Sunday. As forecast some time ago, the week-day London-Cannes service is now operated exclusively by three-engined machines—Wibault-Penhoets and Fokkers.

A daily service is run between Le Bourget, Strasbourg and Vienna, with three weekly connections to and from Warsaw and Bucharest. No alterations have been made in the Far East or South American routes.

MODELS

A Section, Appearing Each Month, Devoted to the Progress and Development of Model Aeronautics

FROM ITALY

THE Aero Club of Rome has formed, under the direction of Ing. Fidia Piette.li, a "School for Flying Models" (Scuola Modelli Volanti) with the object of providing young people with the facility of acquiring a knowledge of the construction and performance of aircraft by means of models. The old type of "flying stick" model will not be encouraged, but attention will be directed towards models following more closely full-sized aircraft.

Two such models—the first products of the "S.M.V."—are shown in the accompanying illustrations. Model No. 1 is a high wing fuselage monoplane, the wings being an accurate scale reproduction of the "Monospar" wing. These wings are constructed of thin plywood, cotton-wire braced and covered with paper. The fuselage is also of plywood, covered with paper, and the rubber motor is contained within a thin wooden tube and drives a metal Reed-type tractor screw. The fin is built integral with the fuselage, and the tail plane is adjustable. Dimensions: Span, 47in., length, 33in.

This model has made successful and promising test flights.

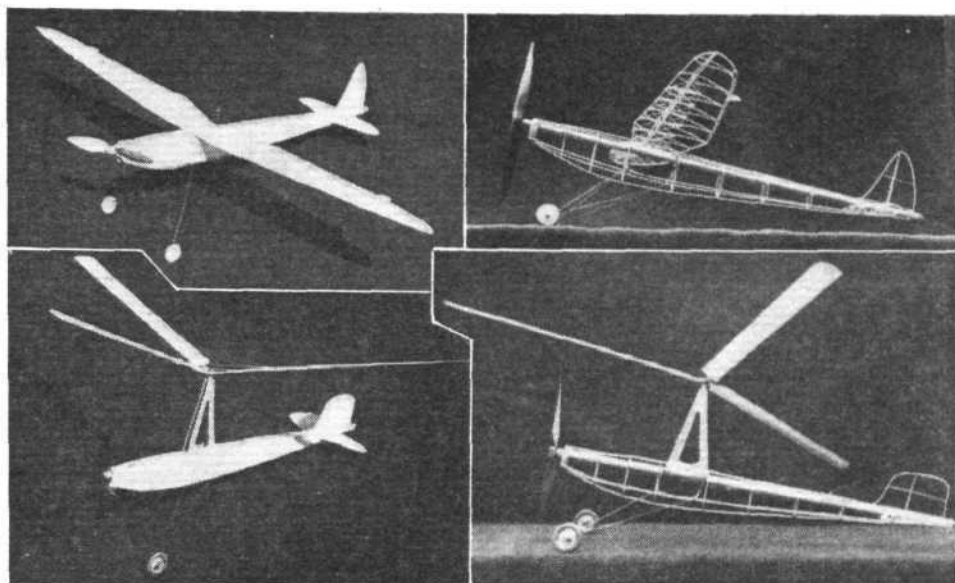
Model No. 2 is an experimental model of the Cierva Autogiro. Its fuselage is very similar to that of No. 1, with modified fin and a different adjustment of the tail plane. The three-bladed rotor is 24in. diameter, each blade having a wooden spar, without ribs, and a drawing-paper covering.

SPEED

UNDER the auspices of the Society of Model Aeronautical Engineers the annual speed-model contest was held at the Heath Extension on September 30th, the seven entrants being hampered by a wind of varying direction, with gusts of about twenty-two miles per hour. Models were required to rise from the ground, a push being allowed, and cover a 150yd. course in flight.

Several beautiful examples of workmanship, with true racing lines, made their appearance. Mr. H. E. White, last year's winner, entered a business-like five-gear low wing, the "Hornet"—weight 50 oz., wing area 1 sq. ft.; Mr. Bullock flew his veteran low wing; Mr. Debenham brought along the six-gear low wing, fitted with new wings; and Mr. R. L. Rogers his "Grasshopper," a twin-fuselage low wing, with three gears and staggered props. This machine weighed 88 oz., and had just over 1 sq. ft. of wing surface, which seemed scarcely adequate, at any rate under the conditions prevailing. Nevertheless, it flew dead straight, but lacked sufficient range to cover the course.

Mr. Debenham's model showed a good turn of speed, but



AVANTI SAVOIA!: Two models constructed by the "School for Flying Models," Rome. At the top is a monoplane with a "Monospar" wing, while below is an experimental Autogiro.

would turn off the course, while Mr. Bullock's veteran proceeded to disqualify itself at 37.88 miles per hour, the highest speed of the day, by touching the ground half-way down.

Victory went to Mr. E. Ross, a shining light of the younger school of aeromodelists, with his twin-gear high wing model, with propeller of 12in. diameter and 14in. pitch, and a wing of reduced area. The rubber accounted for 10 oz. out of a total of 18. Mr. Ross's best speed was 34.09 m.p.h. Second came Mr. R. J. Linfoot, who achieved 24.35 m.p.h. with a similar model to the winner, a geared high wing fitted with a strengthened wing of small area.

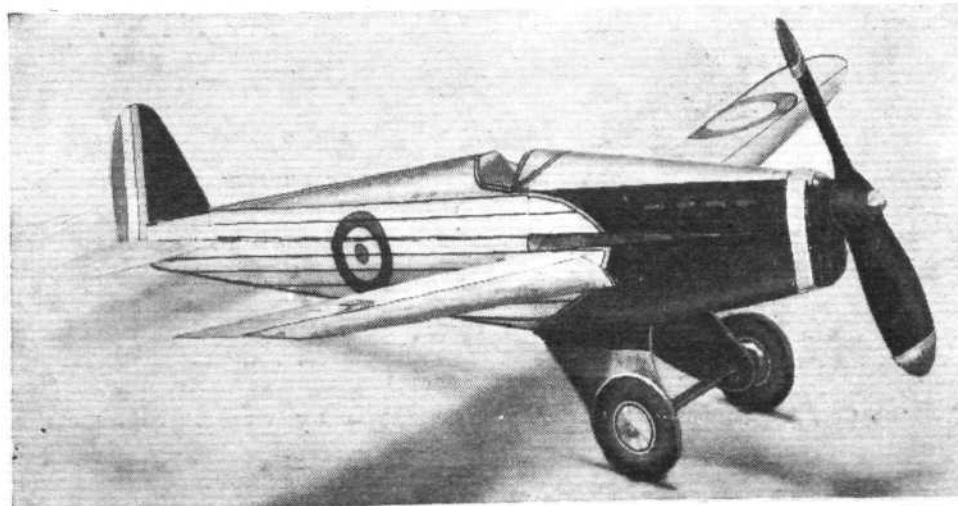
A SUCCESSFUL RALLY

AT the close of the "Model Engineer" Exhibition, The Model Aircraft Club held a Rally at Wimbledon. Despite a troublesome wind, some very good flying took place, various interesting models participating. Mr. Galloway flew one of his lesser "outsized" models, a rubber-driven high wing of a mere 7ft. span. Mr. Fialko's beautiful Percival "Gull," recently illustrated in *Flight*, made a spectacular fast flight. Mr. J. C. Smith laid a smoke screen with his Fairey long-range type of model, Mr. Henery flew a very large "Leopard Moth," and Mr. Knight's biplane "Kaylet," reminiscent of recent D.H. air liners, gave demonstrations of parachute releasing.

T.M.A.C. ANNUAL GENERAL MEETING

THIS important event was held at The Junior Institute of Engineers on September 29th. Satisfactory reports of finance and flying activities were given, and the various officers were re-elected, the only change being that Messrs. A. E. Jones and M. R. Knight become joint Hon. Secs. The tone of the meeting was distinctly optimistic, the enthusiasm of several members taking the commendable form of placing their subscriptions, due on October 1st, on the Chairman's table. Other members please note! Then followed the distribution of prizes won during the past season, and a discussion on the subject of next season's contests. A member having offered a special prize for Autogiros, a contest for this type will be included.

PAPER!: Mr. W. Rigby's latest design in paper-made flying models. It is somewhat faster than the original "Swallow."
(*Flight* Photo.)



THE INDUSTRY

MORE "HAWK" DELIVERIES

THE Miles "Hawk" is now being standardised with specially designed flaps on the trailing edge of the wings, giving a remarkably increased landing speed and take off. Several more "Hawks" have been delivered recently; these include a three-seater to the "George Chavez" Club in Switzerland, a "Hawk Major" to Maj. and Mrs. Baines, and another to Brig. Gen. and Mrs. Lewiss, of Kenya. An order for a "Hawk" has been placed by the Eastern Counties Aero Club, while the Rand Aero Club, S. Africa, have ordered a "Falcon." Lt. Nordwaeger, of the Swedish Air Force, has been staying at Reading Club preparatory to taking a "Cirrus IIIA Hawk" back to Sweden, and is returning later for a "Major Hawk."

THE DOVE "CLOUDRING"

Reid and Sigrist, Ltd., of New Malden, Surrey, have now taken over the manufacturing and selling rights of the Dove "Cloutring"—the ingenious gyroscopic instrument for blind flying, invented by Com. J. S. Dove, R.N., which was described in our issue for September 13 last—and in future all communications should be addressed to them. Incidentally, Mrs. Victor Bruce is having a "Cloutring" fitted to her "Autogiro."

A PROJECTED WINTER CRUISE

Many of those connected with aviation can only get out of harness in winter, and perhaps the best way of spending a holiday this time of the year is to go on a cruise. Mr. Duncan Davis, of Brooklands Aviation, Ltd., has discussed with one or two people the idea of getting together a party to go for a cruise for three weeks in January next, and thus be assured of good company and plenty of fun. He will, therefore, be pleased to hear from anyone interested in the idea, and wishing to form one of the party.

A PRESENTATION AT YEOVIL

Mr. E. M. Benjamin, who for the past eleven years has been secretary to Petters, Ltd., the well-known oil engine and aircraft firm, of Westland Works, Yeovil, and is now leaving Yeovil to take up a position with a big engineering enterprise in the Midlands, was on Saturday, September 29, presented by the directors with a suitably inscribed silver salver, and by the staff with an electric heater and entrée dish, the presentations being made by Mr. P. W. Petter and Mr. E. P. Wrinch (chief engineer) respectively.

HENLYS' MOTOR SHOW BALL

Henlys, Ltd., are holding their Annual Motor Show Ball on October 19 in the Ice Rink Ball Room, Grosvenor House, Park Lane, W.1, 9 p.m. to 3 a.m. Sidney Lipton's Grosvenor House Band will play continuously for dancing, and during the evening there will be a cabaret and a number of novel and valuable prizes will be given away. Supper will be served at 11.30 p.m. Tickets, single £1 1s., double £1 15s. (including supper, buffet, etc.).

Henlys are also arranging a party to go to Mildenhall by motor coach to witness the start of the England-Australia Air Race, leaving Grosvenor House at 3 a.m. and returning from Mildenhall at 7.30 a.m., breakfast at Newmarket en route. Tickets for this will be £1 each.

MARCONI WIRELESS IN LORD NUFFIELD'S "ENVOY"

The Airspeed "Envoy" entered by Lord Nuffield in the England-Australia Race is equipped with a Marconi transmitting and receiving installation to enable the pilots to communicate during flight with the established wireless stations on the route. Of the Marconi A.D.6M type, which is largely used by Imperial Airways and other air-line operators in many parts of the world, the apparatus is suitable for either telephone or telegraph working and its waverange of 550 to 1,550 metres covers not only all the wavelengths used by aircraft and aerodrome ground stations, but also the 600 metre wavelength normally employed by ships and coast stations. During the race the set will be operated by the pilots, Mr. George Lowdell and Flt. Lt. Anderson.

"MISS BRITAIN III's" PROPELLER

We have been asked to state that the propeller of *Miss Britain III*—on which Mr. Hubert Scott-Paine recently established a world's speed record—was made of phosphor-bronze, manufactured by The Manganese Bronze & Brass Co., Ltd., of London.

We are asked to state that the correct telephone number of Commercial Air Hire Ltd. is Fairfield 6468.

AVIATION IN INDIA

India's Key Air Route Position

Commenting on the proposals for the capital expenditure on civil aviation in India, the official memorandum on the subject states that if India adopted the long view she was certain to profit greatly. The memorandum says:—"She has geographical advantages which, if properly utilised, will give her a long start, but may be neutralised if neglected. She lies in the best route between Europe and North Africa at the one end, and China, Japan, Java, Malaya, the Philippines, Indo-China, Australia, and New Zealand at the other, but the traffic to the southern countries of this group could, if necessary, be diverted along a seaplane route via Colombo, and traffic to the northern countries along a land route north of the Himalayas. The latter is already engaging the attention of the Russians and Germans."

"So far India has captured the through traffic, and all the three long-distance air lines cross between Karachi and Calcutta. India will make certain of attracting any new traffic which may be developed if she develops her ground organisation."

Referring to the revenue, the memorandum states that direct increases in revenue will occur from landing and housing fees, from petrol duties, and from rents on aerodromes (already Rs.9,000 a year). Indirect increases will occur from income tax paid by local officials of transport companies and by shopkeepers, and from tourist traffic and increased trade generally. India should have an opportunity of much the same kind as that enjoyed by Venice and Genoa in the Middle Ages and by Britain in later centuries.

A Tata Change

Among the developments in India it appears that Tata's Karachi-Madras service is to be diverted from its present route via Bellary to one passing Hyderabad City. There will be wireless contacts at Ahmedabad, Bombay, Secunderabad, and Madras, and complete night-lighting equipment at Bombay and Madras.

NEW COMPANIES

GENERAL AIRCRAFT, LIMITED. Nominal capital £400,000 in 5s. shares. Objects: to acquire the goodwill and assets of the business of General Aircraft, Ltd. (incorporated in 1931), and to carry on the business of manufacturers of and dealers in aircraft and aerodrome equipment of all kinds, and the component parts thereof, to establish, maintain and work aerial transport of all kinds, to acquire, provide and maintain hangars, garages, sheds, aerodromes and accommodation for aerial transport, etc. The first directors are: Sir Maurice Bonham Carter, K.C.B., K.C.V.O. 24, Hyde Park Gardens, W.2. (director of O. T. Falk and Co., Ltd.). Eric C. G. England, 3, Grosvenor Hill, Wimbledon, S.W.19 (director of Vacuum Oil Co., Ltd.). John M. Ferguson, 32, The Priors, Hampstead, N.W.3 (director of British Pacific Trust, Ltd.). Chas. F. Lumb, Ballard Coombe, Coombe Warren, Kingston, Surrey (director Petroleum Storage and Finance Corporation, Ltd.). Harry M. Schofield (general manager), Onslow Farm Lane, Purley, Surrey. Helmut J. Stieger (managing director), 54, Bathgate Road, Wimbledon, S.W. Solicitors: Pinset and Co., 6, Bennetts Hill, Birmingham.

PUBLICATIONS RECEIVED

Circuit Dust. By Barre Lyndon. Price 7/6 net. London: John Miles, Publisher, Ltd., E.C.4.

Air Review. October, 1934. Vol. I, No. 8. Price 1/- net. London: The College of Aeronautical Engineering, Chelsea, S.W.3.

Aeronautical Research Committee Reports and Memoranda. No. 1575. Collected Reports on British High Speed Aircraft for the 1931 Schneider Trophy Contest. With an introduction by H. M. Garner. January, 1934. Price 10/- net. London: H. M. Stationery Office, W.C.2.

Fog. By Alexander McAdie. Price 10/6 net. London: MacMillan & Co., Ltd.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; I.C. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published October 18th, 1934.

28849. VICKERS (AVIATION), LTD., and WALLIS, B.N. Gun mountings for aircraft. (416,841).

36534. PEIRCE, H. C., and DESOUTTER, A. M. Navigation lamps for aircraft. (416,845).

1933.

1855. ZAP DEVELOPMENT CORPORATION. Aircraft. (416,715).

8601. DOWTY, G. H. Shock-absorber struts for aircraft. (416,857).

9009. CARLTON, W. C. Propeller for use in the water or in the air. (416,799).

22788. SPERRY GYROSCOPE CO., INC. Automatic pilots for aircraft. (416,813).

29736. FAIREY, C. R. Control of aircraft. (416,879).

30357. VEREINIGTE DEUTSCHE METALLWERKE AKT.-GES. Variable-pitch propellers. (416,881).

31067. ARMSTRONG WHITWORTH AIRCRAFT, LTD., SIR W. G., and LLOYD, J. Bomb receptacles for use on aircraft. (416,884).

33638. DORNIER, C. Aircraft. (414,820).

35638. CEBRELLI, M. Control indicator for aircraft. (416,766).